

FANDARD PERSONAL COMPUTING



TANDY'S \$2,600 BARGAIN 386

FIRST LOOKS:

\$2.95/\$3.95 CANADA & FOREIGN



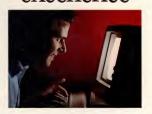
Best Bets for the Bottom Line





 Decision Support Software: 10 Programs Designed for Analyzing Your Options PC Lab Notes: Stack Commands, Create Keyboard Macros, and Change Colors With Free DOSK EY

Turbo C, Turbo Basic, Turbo Pascal and Turbo Prolog: technical excellence



66 Borland International's Turbo Pascal, Turbo Basic and Turbo Prolog automatically identify themselves, by vitue of their Turbo' forenames, as superior language products with a common programming environment. The appellation also means to many PC users a 'must have' language. To us Turbo C looks like a coup for Borland.

Garry Ray, PC Week \$99

Turbo Basic introduces its powerful new Telecom, Editor

and Database Toolboxes

urbo Basic* is the breakthrough you've been waiting for. The same power we brought to Pascal with Turbo Pascal has now been applied to BASIC with Turbo Basic.

Compatible with BASICA, Turbo Basic is the high-performance, high-speed BASIC you'd expect from Borland.

Basically, Turbo Basic is all you need

It's a complete development environment which includes an incredibly fast compiler, an interactive editor and a trace debugging system. It outperforms all its rivals, and because it's compatible with BASICA, you probably already know how to use it.

Includes a free MicroCalc" spreadsheet complete with source code. Only \$99.95!



A technical look at Turbo Basic

- Full recursion supported
- Standard IEEE floating-point formus Floating point support, with full 8087 (math co-processor) integrauon. Software emulation if no 8087 present
- Program size limited only by available memory (no 64K limitation) VGA, CGA, and EGA support
- Access to local, static, and global variables Full integration of the compiler
- editor, and executable program with separate windows for editing messages, tracing, and execution G Compile, run-time, and I/O errors place you in the source code
- where error occurred If New long integer (32 bit) data
- Full 80-bit precision
- Pull-down menus

Full window management

66 Borland has created the most powerful version of BASIC ever.

Ethan Winer, PC Magazine 33



communications package which takes advantage of the built in communications capabilities of BASIC-use as is or modify

- · Pull-down menus and windows XMODEM support
- · VT 100 terminal emulation
- . Captures text to disk or primer PhoneBook file
- 300, 1200, 2400 baud support · Supports script files
- · Fast screen I/O · Supports most of XTalk's command set
- · Manual dial and redial options Use Telecom Toolbox to embed communications capabilities into your own programs and/or build your own communications package. Source code included for all Toolbox code and sample

programs. Only \$99,95! For the dealer nearest you or to order by phone call (800) 255-8008

in CA (800) 742-1133 in Canada (800) 237-1136





NEW!

Database Toolbox means that you don't have to reinvent the wheel each time you write new Turbo Basic database programs.

- "Trainer" shows you how B+ trees work. (Simply key in sample records and you'll see your index being built.) Turbo Access instantly locates.
 - inserts or deletes records in a database-using B+ trees
- Turbo Sort sorts data on single items or on multiple keys and features virtual memory management for sorting large data files

Source code included Only \$99.95!



Editor Toolbox is all you need to build your own text editor or word processor. Includes source code for two sample editors.

First Editor is a complete editor ready to include in your programs. complete with windows, block commands and memory-mapped screen routines.

MicroStar is a full-blown text editor with a complete pull-down menu user interface, and gives you

- Wordwrap Undo last change
- · Auto-Indent
- . Find and Find/Replace with options · Set left/right margins
- · Block mark, move and copy . Tab, insert, overstrike modes, line

center etc. Includes source code. Only \$99.95!

Choose ALR's 16-MHz 80386 system for less than \$2,000, or a blazing 20-MHz system for less than \$2,500.

Until now, if you wanted three times the speed of an ATTM you paid about three times the price of an AT. Now Advanced Logic Research announces second-generation 386 systems—designed to do to the price barrier what our first generation

first generation did to the performance barrier. Annihilate it.

Starting at \$1990, ALR's totally new 386/2 systems couple the power of 32-bit processing with true 32-bit memory. Even the system and graphics BIOS are implemented in 32-bit architecture. That simply means your

applications will run faster on a 386/2 than any other available computer. And ALR 386/2

systems let you use all the peripherals, graphics, enhancements and applications developed for the most widely adopted computer operating environment in history.

Which makes you wonder why others want thousands more for less flexible, firstgeneration 386 systems.

How to run circles around the competition.

Sure, Compaq and IBM use the fastest available hard disks and controllers with 1:1 interleaving,

Advanced Logic Research Compag

IBM

just like Advanced Logic Research. But they don't buffer a full 17-sector hard disk track, settling for sector by sector buffering. Our way makes the fastest even faster where it counts—in the real world.

And with up to 2 MB of RAM
on the motherboard, you
get flexibility with your
power.

Picture this.

Naturally the raw speed of 80386 means the 386/2 series



EGA graphic workstations for CAD/CAM. Or choose enhanced

make great

EGA™ or GA 786™ graphics from ALR and a variety of sources and get the most advanced resolutions available.

The 386/2 series makes the best use of floor or desk space.

You can even run applications without memory limitations. Because all enhanced ALR systems include the Phoenix Control/386 Software utilities with 32 bit disk

utilities with 32 bit dis caching, Vdisk and EMS/EEMS Software. Speed to burn. Without having money to burn.

Read the reviews and compare the 386/2 to the others. Then compare more. If you find more power, flexibility and quality somewhere else, buy somewhere else. You won't find a more competitive price anywhere else.



The ALR 386/2 Model 40 with EGA adapter is similar to the IBM Model 80-041 and Compaq Deskpro 386 Model 40 with EGA adapter. Except for a lower price and twice their standard RAM.

Advanced Logic Research. Faster, first.

Advanced Logic Research got its start designing highperformance microcomputers for customers that demanded more power than they could get off the shelf. We designed one of the first IBM PC-compatibles. Developed the enhanced performance AT-compatible PC Magazine called "... the most judicious choice..." And introduced the first 386 system, which PC Tech Journal said "...brings up-to-date technology to affordable 386 systems."

Our complete line of performance XT and AT-compatible systems offers the advanced technology of one of the world's most experienced PC design teams. And the costeffective quality of Singaporebased manufacturing. So you simply get more computing power for less money. From a growing international network of ALR dealers chosen for their ability to deliver fullservice and support.

Call Advanced Logic Research today for the name of your local ALR dealer. And discover the price of power isn't as high as it used to be.

Performance Specifications

386/2 Model 10 \$1990

- ALR-designed system board
 1M-St- bit RAM, expandable
 15 MHz 80386 processor
 2 MB on system board
 (20-5Hz optional)
- . 1.2 MB Goppy disk drive • 80387 support
- · Sertal and parallel ports Bergannion slots

386/2 Model 40

Desktop or floorer * 2 MR 52-bit RAM • 8 expension slots · 101-key keyboard

a 40 MB 30 ms or less access time hard disk drive! . EMS and EEMS software 1.2 NB floppy disk drive
 Serul and parallel ports

 36 MHz 80386 proc (20 MHz optional) 80387 support \$4690

\$3990

386/2 Model 80 • 2 MB 32 bit RAM

. 70 MB, 30 ms, or faster access time hard disk drive 16-MHz 90386 processor (20-MHz optionsil) 500 Kbs/s trans rate EMS and EEMS software 80387 support . I.2 MB floppy disk drive . 52-bit Vdask and dist caching software

Serial and parallel ports 386/2 Model 130 \$7299

 ALR-designed system board
 2 MB 32-bit RAM Sexus psion slore * 150 MB, 30 ms, or faster,

access time hard disk drive! r20-MHz optionals 900 Kbs/s trans rate • EMS and EEMS software • 8058" support . 32-bit Wilsk and disk caching software . 1.2 MB Boppy disk drive

· Serial and parallel ports Enhancements

A complete range of enhancements, including 4 MB 32-bit RAM and multifunction products as well as additional I/O options are available 640 x 480 pixel AV EGA with 16 colors and GA 786 graphics adapters available third quarter

Monitor not included

ON 38612 Model 130 Systems until November 1 eine man wareinger



Advanced Logic Research, In-10 Chrysler, Irvine, CA 92788 (714) 581-6 FAX (714) 581-9240 TELEX: 5106014525. Answer back Advanced Logic From Asia or Europe call ALR/Wearnes Technology Phone: (65) 2592521 TELEX: RS38115WRNTEC

Servidouspes, configurations and prices rubices to change without notice. Convright 1987 Advanced Logic Research. All rights reserved. 586/2 and GA 786 are resdemarks of Advanced Logic Research, Inc. All a studemark of International Business Machines Corp. Phoenix and Control (M6 are undermarks of Phoenix Technology, Ltd.

CIRCLE 521 ON READER SERVICE CARD

Did you know some of the very BEST software is available as

SHAREWARE?

Shareware is a revolutionary concept of bringing top quality software to users at a fraction of the commercial prices. These programs request that the satisfied user register with the author to receive program updates, technical assistance and additional documentation Sample some of the many

programs available through the PC-SIG library at only

\$6 per disk

□878, #627 PC-WRITE A powerful and popular word processing program, works well with a mouse. Spalling checker is an additional

mouse Spalling chicker is an additional feeture. 312.

| 8529 New York Word This program offers main feeture in the second secon

DALAINS MANAGEMENT

(#6, 9750 PC FILE* A powerful danabase management program that is easy to use Great to it
opening labels. Working et al. PC FYTE* to
certifing labels. Working et al. PC FYTE* to
PAST, #286 FILE EXPRESS An information management program Small and medium sized databases are easily manipulated by using meru
driven commands.

TRUTIES

14476 HARD DISK UTILITIES A selection of the best usky programs have been selected from over 25 disks in the library send outspiled onto one disk for your ease of use.

1557 IMAGE/PRINT This program sillows your dot matrix, printer to generate documents that are in Name I same A while format.

matrix printer to generate Near Letter Quality format COMMUNICATIONS #499 PROCDMM A profesisonal communications program

LANGUAGES-EDUCATIONAL TOOLS

| 9012 FOREIGN LANGUAGES A self-inerming educational tool, provides instruction in Hebrew. German, Seenith, French, and Talein. Multiple choice forms loeps tracts of entrols for relating purposes. Beginning and intermediate levels ... SALES MANAGEMENT.

☐ #390 FLIGHTMARE. An excellent graphics game

Highly recommended to test your skills.

A457 GREATEST ARCADE GAMES This include Striker and Space Wars, and many more must for your game library PREADSHEETS

☐ #199 PC CALC This program is easier to use than Lobus, very powerful and effective ☐ #999 OUBECALC This apresidance is three dimensional, with an X Y, and Z axis Commends are similar to Lobus.

PC-SIG LIBRARY ON CD ROM NEW 1967 PC-SIG DIFECTORY 1 YEAR PC-SIG MEMBERSHIP

SPECIAL OFFER Any 5 Disks plus 1-Year Membership Only \$39 (include \$4 stepping & handling)

Most programs have documentation on disk and request a document from satisfied users. Please add \$4 postage and handling per order (\$10 foreign) — California residents add.

Total Enclosed S _____ by Check VISA MC

Name _State____Zp.

PCSIG To order, call: 800-245-6717 In CA: 800-222-2996 For technical questions or local orders: (408) 730-9291

10300 East Duana Avenus Sunnyvala, CA 940 CIRCLE 145 ON READER SERVICE CARD



EXECUTIVE EDITIONS BiO Howard, Luisa Simone, Paul Somerson WEST COAST EDITOR Jared Taylor SENIOR EDITOR
SENIOR TECHNICAL EDITOR
SENIOR EDITOR, TECHNICAL COLUMNS
ASSISTANT MANAGING EDITORS Gus Vendits

MANAGER, COPY EDIT ASSOCIATE EDITORS

PRODUCTION EDITOR ASSISTANT PRODUCTION FOITOR

ASSISTANT EDITORS EDITORIAL ASSISTANTS

PROOFREADERS PROOFREADERS
BUSINESS MANAGER
ASSISTANT TO THE EDITOR

INTERNS INTERACTIVE READER SERVICE MANAGER PC-IRS (212) 696-0360, 1200 bes. B. N. I

SENIOR ART DIRECTOR TECHNICAL ART DIRECTOR ASSOCIATE ART DIRECTOR

GRAPHIC DESIGNER ASSISTANT ART DIRECTOR GRAPHIC ARTISTS

INVENTORY CONTROL TECHNICIAN MARKETING DIRECTOR

PUBLIC RELATIONS MANAGER SINGLE COPY SALES DIRECTOR
RETAIL SALES & MARKETING MANAGER

CIRCULATION COORDINATOR

AD PRODUCTION ASSISTANTS

ASSISTANT PRODUCTION DIRECTORS

SENIOR AD. PRODUCTION MANAGER AD. PRODUCTION MANAGER

LAYOUT ARTIST ADMINISTRATIVE ASSISTANT RECTOR, PC LABS

LABS SERVICES MANAGER . . . PROJECT LEADERS TECHNICAL SUPPORT SPECIALIST LABS COORDINATOR INVENTORY CONTROL MANAGER

BALES MANAGEMENT

■667, 9668, 9669 PROSPECT: A useful sales management program that allows you to schedule appointments. Searches and ethieves names, activities, or missingers with ease and speed...

\$296.00 \$ 12.95 \$ 20.00

PRESIDENT SENIOR VICE PRESIDENT, MARKETING VICE PRESIDENT, CONTROLLER VICE PRESIDENT, CONTROLLER VICE PRESIDENT, CREATIVE SERVICES VICE PRESIDENT, RESEARCH VICE PRESIDENT, RESEARCH VICE PRESIDENT, RESEARCH VICE PRESIDENT, CREATIVE NEW VICE PRESIDEN VICE PRESIDENT, CRCULATION SERVICES....
VICE PRESIDENT, MARKETING SERVICES
VICE PRESIDENT, DEVELOPMENT VKE PRESIDENT.

PRESIDENT

PEDDLYTION DESICTOR

Chairman Philip B: Konan President Konoch H: Koppel Senior Vice President Philip Sinc Vice Presidents Laurence Usdin, Wilham Philips. J. Malcolm Morm., Saven C: Ferman Tressurer Solvys 1: Tasbran Secretary Senium A: Abstan

Marriel is the publication may not be reproduced in any form without procurem. Requires for procurem about the dentard to have Laurendon' Zell'D my Company One Path Ave. Non-York, NY 10016. Editorful Communications may be addressed to MCI Hail 157 9701.

William Lobas

2011 Machiner

Robert L. Hummel Crug L. Stark Greg Pastrick, Paul B. Ross Lands Look

Carol Elison, Nora Georgas, Cheryl J. Goldberg, Robben Juris Karen A Carter Michael Cohn, Barbara B. Farrell, Carole Goldstein, Mits Jones, Jonathus

Matrices, Continue D. Miller, Paul V. Olowacz, Ann Ovodow, M. Stephanie Ricks, Donald P. Willmott Robert Barnett, Stephaniy Book, Peggy Gavan, Christina Okang, Bona Price, Jessefer Zano Median David Armstrong, Michael W. Machinere David Baker

les Luber Dolores William Donors Williams
Richard Anons, Frank J. Derfler, Jr., John C. Dvonk, Gleen Hart, Steve
Holmer, Stephen Manes, Michael J. Mefford, Barry Owen, Charles Petrold, Jeff
Pronse, Warn L. Rock, Neil J. Rubenking, Jim Seymour, M. David Stone
Alaa Cohen, Erika Hortz, Richel Milder

Mary Zask Denne Plankin

One Park Avenue, New York, NY 10016, (212) 503-5100

Laune Warke Natalic Chu rles Conover, Joe Sout Leigh Margerison, Diane Man Frieds T. Smallwood William G. Wone

Bruce Freeman Bill O'Bren, Philip F H. Rose Charles Rodrigu David Rivers John R. Delanes

Bob Woltendorf Carol Beredetto

Dorothy Chillintier, Carlon Loro Susan DePierro Wendy Goldstein Suun Livoe, Lisa Saladino EDITORIAL PRODUCTION COORDINATORS Dernes Fitzgersid, Barbara Ross Melvin Foster-Poetsch, Lunda Harms, Doue Vaushn

ZIFF-DAVIS PUBLISHING COMPANY

Kenneth H. Koppel Paul H. Chook John Vlachos Horbert Stern Martan O. White Alicia Marie Ive Seth Alpent Hugh Tiction

ZIFF COMMUNICATIONS COMPANY

At Eligence 20 Anni Anglesche (1988) Weiter (1988) Weiter

W/RPA

Incomparable!

"It outperforms the competition at a price that is simply the best deal on the market."

DataPro Research Corporation

The A*Star

"Wells American's A * Star II stands out from the crowd...This reviewer found the (keyboard) touch to be very good...The documentation) is well written and easy to understand and all the illustrations are clear and accurate.

We find the A * Star II
to be a very attractive
AT-compatible computer."

Computer Buyers Guide
—Compatibles Report

-Compatibles Report

"If you're looking for a

If you re looking for a bargain-priced AT type computer - and there are many to consider these days - the A * Star is one that seems well worth the price."

Personal Computing

—Patrick Honan

"This computer is a whale of a buy...Inside the case it is neat and well designed. It just looks like quality...! would find it hard to believe that you could outgrow the A+Star anytime in the part future. If I were buy

near future...If I were buying a computer now it would be this offering from Wells."

Computer Shoppe

—Lon Andrews

"All in all, [the A * Star] is a superior PCAT compatible unit...When one considers price, performance, upgradability, manufacturer support and assembly within the USA, it is a definite winner."

Comparter Dealer — Jake Engler

"It is as compatible as the best units tested....Its money-back guarantee is commendable....[the A + Star] has the potential to be a low

cost whiz."
PC Magazine
—Jon Pepper

"What the world needs now is an AT which is significantly cheaper than all the others, while providing a higher level of performance than most, with a high degree of compatibility and good quality. And that's exactly

what the A + Star II is

Australian PC
—Ian Davies

"Graphics screens that take 10 and 20 seconds to redraw at 6MHz, now appear in three or four seconds. If it doesn't run at 12MHz, in 5 seconds you can switch to a lower speed. We were very favorably impressed."

DataPro Research Corporation

Unsurpassed quality. (Inbeatable performance. Exceptional manufacturer support. The experts agree! There are no other IBM PCAT compatibles quite like our A+Star microcomputers. With prices starting at only \$1095 for a 12MHz unit, it's no wonder so many of our customers are saying goodbye to IBM in favor of a "good buy" from Wells American. Call or write us today about our 31-day trial offer.



Corporate Headquarters: 3243 Sunset Boulevard • West Columbia, South Carolina 29169 • 803/796-7800 • TWX 510-601-2645



Making Every Number G. William Dauphinais and

Timothy J. Lee/PC Labs

designed to help you boost

reviews 59 accounting systems

Count

Automating Your Books, Analyzing Your Options Jim Seymour/Our special issue on business management software examines nearly 70 products that target one of the most important business considerations-the bottom line. Today, one of the key elements of effective automated business management includes the selection of the right software for setting costs, paying bills, calculating earnings, and exploring alternatives. This issue of PC is loaded with accounting and decision support packages that can help you track your company's financial activity and plot its

future directions.....



schemes. Backed by the consultants of Price Waterhouse and other experts in the field, we tell you what to look for before you invest in an electronic bookkeeper. Our analysis and testing covers more than 300 features-from how well a package deals with new data to how it handles recurring entries99

Economy-Class Auditors Good things often come in small packages, and the 17 low-end packages reviewed here are a solid starting point for the small business working its way up. Discover this choice set of accounting packages costing \$500 or less. You'll find programs that possess all the features of their high-end cousins......107

Summary of Features 116

Tailor-made Ledgers Reviews of five accounting

systems that can be customized with the dBASE programming language. These are some of the most popular do-it-vourself dBASE accounting kits 151 Summary of Features 154

High-Priced Bookkeepers Get the lowdown on 37 featurerich high-end accounting software packages. Built to go beyond the basic General Ledger, Accounts Receivable, and Accounts Payable, these systems are offered at prices that often exceed \$500 per

module......165 Summary of Features 187 Accounting System Profiles

A special 21-page section that takes an extensive look at the details of each accounting package's form, function, and approach 274

Searching for Solutions Jared and William Taylor/ Decide and conquer with our reviews of ten decision support programs that help you sort through the variables, examine the options, and identify a logical solution. Your decision making will be more than just a coin toss......311





Operational accounting is merely one of OPERATIONAL ACCOUNTING the three subgroups that constitute a complete financial management reporting system.

FIRST LOOKS

Hands On:

- IBM's PS/2 Model 80 · Tandy's new products, including its 386 machine and laser printer
- NEC's MultiSync adapter for IBM's PS/2 line DESOview 2.0
- · Low-cost XT compatibles from Vendex and CompuAdd IRMA2

VIEWPOINTS

LETTERS TO PC MAGAZINE.

PC ADVISOR

Mitt Jones/Help in routing text directly to a printer, in running a PC on its side, in programming EGA cards, and in boosting DRAM chip

speed27 FROM THE EDITOR'S SCREEN

Bill Machrone/Look-and-Feel Follow-up59

JOHN C. DVORAK The BS/2 Operating System-Scandal in Istancia Inside Track...

JIM SEYMOUR Software Sells Hardware ...75

STEPHEN MANES The Trade Show: Grab for Cash83

AFTER HOURS WillWriter, Dinner at Eight:

Bureaucracy: The Baseball Line Commander, NFL Trueline ...

PRODUCTIVITY

PC LAB NOTES Expanding DOS at

the Touch of a Finger Jeff Prosise/DOSKEY stacks and edits commands, creates keyboard macros, and adds durable color settings 357

PROGRAMMING/ UTILITIES Adding Notes to Directories

Michael J. Meffordi DIRNOTES clears space in your directory listings 385

SPREADSHEET CLINIC Jared Taylor/Disinheriting your ERRs; DOS commands in Symphony: range name rechristening.....

CONNECTIVITY CLINIC Frank J. Derfler, Jr./Mini NetWare at a mini cost; sync and async auto-dialing modems; the cold water pipe controversy 413

TURBO POWER USER Neil J. Rubenkine/How Turbo impostors can save your programs; saying Yes at the command line; beeping when compiling is done 421

USER-TO-USER

Paul Somerson/Printer driver mass production; commanding multiple arguments; a way to defeat FORMAT C: 433

PC TUTOR Charles Petzold/The zero-byte file mystery; detecting ANSI, SYS: unreeling a hard disk directory listing 445

Cover Photograph: Roberto Brosan

VHAT'S INSIDE



Dauphinus of Price Waterhouse

PC Magazine's reputation rests in no small part on all-encompassing blockbuster issues devoted to single topics. Earlier this year we reviewed 44 graphics programs, then 87 modems; in a few weeks you'll see our annual smorgasbord of more than 100 new printers. And we've devoted this issue to

business management, including 59 top accounting packages and 10 decision support programs. We are pleased to report that no other magazine has ever undertaken reviews of business management software on this scale.

Over the past 3 years, we have called upon the "Big Eight" accounting firm of Price Waterhouse for ongoing reviews of accounting software, and it was only natural to enlist its expertise for this special issue. Planning began nearly a year ago with William Dauphinais, a Price Waterhouse senior partner in St. Louis and team leader for PC Manazine's Price Waterhouse Report account-

Another Price Waterhouse associate, Timothy Lee, a management consulting services coordinator in PW's New York office. assembled a testing script with PC Labs to identify and evaluate more than 300 features in accounting software. That 100-page script reigns as the largest ever used at PC Magazine, requiring 35 hours of hands-on testing for each program. The summary of features tables alone fill more than 30 pages. For nearly 5 months, Tim continued as our technical adviser on

the project. The 21 blocks from PW's Manhattan office to PC Magazine became a part of his daily commute. Following our report on accounting software, West Coast editor Jared Taylor and his brother. William, a specialist in artificial intelligence who represents the East Coast contingent of the family (Bill hails from New Hampshire), evaluate decision support soft-

Also in this issue is DOSKEY, a free utility by our star programmer Jeff Prosise that promises to become a classic. DOSKEY lets you recall, edit, and replay previous commands, change your screen colors effortlessly, and execute thomy DOS commands using single function keys. Around the office we put lots of utilities onto our hard disks and end up erasing most of them. This one's a definite keeper. To top it off, the issue also contains Michael Mefford's useful DIRNOTES, which lets you add comments to the normally inscrutable filenames in your DIR listings. Try them

Dedicated to the memory of Iris Knittel

ware

both.

"The PC's Limited 38616 should top the list of anyone wanting today's utmost in performance and power."

—PC Magazine, August 1987

Impressing the folks at *PC Magazine* is no easy task.

So when they praised our 386" machine as "one of the fastest running desktop computers available today," it's safe to say they liked what they saw. And what they saw was the industry's first true

second-generation 386 machine; a computer that has a less cluttered motherboard that utilizes Very Large Scale Integration and speedy Static RAM. The result is a 386 machine with zero wait.

states, that screams through compatible software, and that blows the doors off the competitor's 386 machine, in *PC Magazine's* words, "...at times crunching numbers 50 to 70 percent faster."

While PC Magazine gave us high marks for our power and performance, you'll give us equally high marks for our low price. We've eliminated the middlemen—and their 35-40% markups—and pass the savings that comes from buying direct from the manufacturer on to you.

But saving money is just the beginning We back every machine with a one-year warranty and a 30-day no-questions asked money back guarantee. And the low systems prices include the cost of your optional 12 month on-site service contract with Horeywell But.

To order your computers, call us at 1-800-426-5150. Talk to one of our sales representatives about which computers you want, give us your credit card or corporate purchase order number, and UPS will deliver your computers to your door

So why just read about the fastest 386 machine when you can pick up the phone and order it. Just call us. 1-800-426-5150





MORE IMPRESSIVE COMPUTERS.



The 38616 Monochrome System

Includes the following standard features and options.
Intel 80386 running at 16 MHz
1024K of 0 Wait State Static RAM
1.2 Meg floppy drive
Combined floppy and hard disk Controller
101 key Keyboard

192 watt Power Supply System Clock/Calendar/Configuration Data in CMOS

RAM with battery backup
Hercules compatible Monochrome Graphics card
2 Serial and 1 Parallel port
High Resolution Monochrome Monitor
Smart Vu™ (Real Time Diagnostic Display)

12 month, on-sile Honeywell Bull service contract With a 40 Meg, 28 MS hard drive and standard chassis \$4,499

With a 70 Meg, 28 MS hard drive and standard chassis \$4,899

\$4,899 With a 150 Meg, 18 MS hard drive and standard chassis \$5,899

The 38616 EGA Color System

The above system with the following substitutions. EGA Video card The EGA High Resolution Monitor

The EGA High Resolution Monitor
With a 40 Meg, 28 MS hard drive and standard chassis
\$4,999

With a 70 Meg, 28 MS hard drive and standard chassis \$5,399 With a 150 Meg, 18 MS hard drive and standard chassis

With a 150 Meg, 18 MS hard drive and standard chassis \$6,499

The 28612 Monochrome System

Includes the following standard features and options.
Intel 80286 running at 6 and 12 MHz
1024K on board • 1.2 Meg floppy drive
Combined floppy and hard disk Controller
84 key Keyboard • 192 watt Power Supply

Clock/Calendar with battery backup Hercules compatible Monochrome Graphics card 2 Serial and 2 Parallel ports

High Resolution Monochrome Monitor • Standard chassis Smart Vu¹¹ (Real Time Diagnostic Display) 12 month, on-site Honeywell Bull service contract With a 40 Mes. 28 MS hard drive

\$2,699 With a 70 Meg, 28 MS hard drive \$2,999

The 28612 EGA Color System

The above system with the following substitutions. EGA card • 2 Serial and 1 Parallel port The EGA High Resolution Monitor With a 40 Meg. 28 MS hard drive

> With a 70 Meg, 28 MS hard drive \$3,499

We have technical support people that you can talk to for free by calling 1-800-624-8896.

1-800-624-9896.

Our Total Satisfaction Guarantee works like this: Any item bought from us may be returned within 30 days from the date it was shipped for a full refund of your purchase price. Returned items must be as-new, not modi-

fied or damaged, with all warranty cards, manuals, and puckaging intact. Returned items must be shipped prepaid and insured, and must bear a PC's Limited Credit Return Authorization (CAA) on the shipping label. Our One Year Limited Warranty says we warrant each system we manufacture to be fire from defects in materials and workmanship for one

year following the date of shipment from PC's Limited. During the one year period, we will repair or replace, at our option, any defective products at no additional charge.

All systems prices include the Resignes and options listed. Pricing and System Specifications are subject to change without notice. Please inquire for current details. In 1987 PC's Limited. Del Computer Corporation

AT VERY IMPRESSIVE PRICES.



The 2868 Monochrome System

Include the Elevation Included Charactery Spaces and Part Included the Elevation Included Charactery Spaces Included Charactery Spaces Included Charactery Included Ch

\$1,799 With a 40 Meg, 40 MS hard drive and standard chassis \$2,149

The 2868 EGA Color System

The above system with the following substitutions. EGA card * 2 Serial & 1 Parallel port EGA High Resolution Monitor With one 20 Meg, 65 MS hard drive and the space saving chassis \$2,990

With a 40 Meg, 40 MS hard drive and standard chassis

Ogstonal Beneweil Buil On. Side Service Centract provides for on site service for parts and labor within the next business day types gateen is seaded within 100 takes of Beneyeria Built. So serves locations, for the service of th

The Turbo Monochrome System

Includes the following standard, features and options.
Intel 16-bit 8088-2 running at 4.77 and 8 MHz
640K on board • 84 key Keyboard
130 watt Power Supply
Hercules compatible Graphics Adapter
High Resolution Monochrome Monitor

12 month, on-site Honeywell Bull service contract
With one 360K floppy drive
\$799

With one 360K floppy and a 20 Meg, 65 MS hard drive \$1,199

The Turbo EGA Color System The above system with the following substitutions. EGA card

The EGA High Resolution Monitor With one 360K floppy drive and a 20 Meg, 65 MS hard drive \$1,699

With one 360K floppy and a 40 Meg, 40 MS hard drive \$2,199

AT. Hercules, and Honeywell Bull are registered trademarks.

To order a PC's Limited computer call us at <u>1-800-426-5150</u>. Extension 741. Our sales lines are open from 7 to 7 Monday through Friday and 9 until 2 on Saturday, Central Standard Time.

PC'S LIMITED

The standard by which all other monitors are monitored.



the best-selling color monitor.

Like most revolutionary products, the NEC MultiSync is based on a simple idea: Instead of one monitor for one board, why not have a single monitor compatible with all graphics boards. From CGA to PGC and beyond.

That simple idea has made MultiSync the world's best-selling color monitor and the undisputed industry standard.

MultiSync offers a maximum resolution of 800 x 560 for brilliant business graphics. And compatibility with old and new systems from PC/XT/AT to IBM PS/2 and Apple Mac II. It has a 14" diagonal screen, tilt/swivel base and 7-way text switch that lets you choose the color that's easiest on your eyes.

Best of all, it has one feature no one else can give you at any price: NEC. So why settle for monitors trying to equal the standard when you can have the one that created it. For literature or a dealer call 1-800-447-4700. For technical details call NEC Home Electronics (USA) Inc. 1-800-NEC-SOFT.





Pre-shrunk. Pre-fitted. Pre-thunk.

When you buy a Ven-Tel modem, you buy 12 years of well thought out, innovative technology that's custom-tailored to your needs.

Like the PC Modem Half Card," the first modem ever shrunk to fit into a short slot, so you'd have another long slot for more memory or other functions.

And our "pre-fitted" 2400 baud modemthe only 2400 that lets you double your transmission speed without reconfiguring your PC, buying new software or changing switches.

Another thing: other modems have 300 or so working components, ours have 70. That means they use less energy and generate less heat-the main cause of PC

GENERALES LESS TRANSFER malfunctions. Even so, we back every Ven-Tel modem with a free five-year warranty. No other major manufacturer even comes close.

MADE IN THE U.S. A So when the Ven-Tel modern you buy off the shelf seems like it was custom made for your office, don't be surprised. It was.



Our free 24-page booklet, "How To Select The Correct Modern," contains specific information about our full line of moderns. To request your copy, call 800-538-5121. In California, call 408-727-5721.

LETTERS TO PC MAGAZINE



THE MODERN MODEM

Winn L. Rosch's assertion that the telephone system cannot carry direct current (DC) signals was a disquicting note ("The Modern Modern: Bridge to the On-line World," PC Magazine, Volume 6 Number 9). Yes, the system cannot carry DC signals end to end, but it certainly does carry DC signals from the subscriber to the switch, Also, Mr. Rosch assumes that all modulation is amplitude modulation (AM) and explains that the 300- to 3,000-Hz telephone band could carry data spread 1.650 Hz to either side of a 1.650-Hz carrier. Simple math will tell you that only 1.350 Hz on either side of the 1.650-Hz carrier will fit into that bandwidth.

Before reading the article, I had read that various pulse transmissions systems in which the pulse is proportional to the analogous signal are analog systems. Mr. Rooch tells me that digital is a series of pulses, but when the digital message is transmitted over the phone lines as tones, it is an analog signal. What are the real definitions of analog and digital?

James A. Ross Adamstown, Maryland

Winn L. Rosch replies:

Mr. Ross is indeed correct in that an editing error caused the 1,350 Hz of deviation available for simple modulation to appear in print as 1,650.

Modulation methods other than strict AM were in fact discussed in the article, but the fact remains that communicating any intelligence requires bandwidth. Even a simple CW (carrier wave) signal—onloff Morse code transmissions at a single frequency—occupy bandwidth proportional to their information content.

Although telephone wires-or any con-

per pair—can carry direct current, there is no legal way for a PC user to introduce DC onto a dial-up telephone line, nor is there any guarantee a DC signal will travel from one end of a connection to another. It is thus safe to conclude that a telephone



channel cannot be expected to carry DC.

Please note that we included a glossary
of definitions for analog and digital as information-coding systems with the article.

I found Winn L. Rosch's article "The Modern Modern: Bridge to the On-line World" an excellent and enjoyable discussion of how modems interface with the telephone world. His statement that most telephone systems remain analog, but that communications systems are likely to become increasingly digital in the future, is quite true; the two ends of the telephone connection that the modems connect to are analog, as he describes. However, within the telephone network (maybe only a few yards away from the modem), the signal is likely to be converted to digital format. Some subscriber carrier systems, many central office switching machines, most of the carrier systems between nearby central offices, and much of the long-distance network is now digital. Since the basic function of the telephone network is still to car-

ry voice signals, these digital sections have been integrated into the analog telephone network as needed to supply additional capacity or to replace obsolete equipment. The result is that a given telephone signal may go through several sets of analog/digital and digital/analog conversions in its path between two subscribes.

The AD conversion consists of sampling the analog signal 8,000 times per second and digitizing each sample into an 8-bit code. In this format, a single analog telephone signal requires 64 kilobits per second, gives almost undectable degradion of the telephone signal, and is capable of handling the 9,600-bit-per-second modem signals. Nowever, the voice signal needs only the full 64-kilobit-per-second capability for cocksonial speech transients.

More-sophisticated encoding protocols can transmit the voice signal with only slight degradation while using less bits. One early subscriber loop multiplex system used "delta modulation" to squeeze 40 voice channels into the 1,544-kilobitper-second bit stream normally used for 24 voice channels. So even though the voice signal can get along without these extra bits, high-speed modem signals cannot. Most 9,600-bps modern signals have completely unacceptable error rates when sent over channels with such data compression. and even 4,800-bps signals are a bit iffy. (Note that these comments apply only to modern signals fed into the telephone network as voice frequency analog systems. Digital channels leased from the telephone companies are connected directly into the digital transmission facilities and are not subjected to either A/D conversions or data compressions.)

John Laidig Holmdel, New Jersey

OUTSTANDING SOFTWARE

\$**3**50 g

\$300

so one s besse on worke with their courses.

BUSINESS 1—EZ-Forms business form generation, completion and printing program.

CAO 1—Altamira, a 4 color object onented draw
ing growth and color object onented draw
ing growth.

ing program. Color required

COMM 4a,b,c,d,=-(5 disks) RBBS Bulletin

Board System 14-10

OATABASE 1a,b--(2 disks) File Express menu
driven general purpose distribase mngr.

EOGCATION 1--interactive DOS butnoal for new

EOUCATION 1—Interactive DOS hytofial for new Pouses: Makes learning DOS pariess BAMES 1—30 PacMan, Kong, SpaceWar, JariLloe, and more Color required.

GAMES 2—Outburt, Pango, Centipede, Monopoly, Toarra, and more Color required.

Junitioe, and more Color required.

BAMES 2—Obert, Parapo, Centiprode, Monopoly
Zoarre, and more. Color required
(BAMES 3—Bidopick yets est rules), Arm Chair
OB, and Empire (War Game)
(BAMES 4—Bidot, Staffrek, and the ongraal
Colossal Cares Adventure.

GAMES 5—The Hacks adventure game from the
universities. Like Region, only more complex
(BAMES 5—Thail), Othelio, Oragons, Sopwith

 BAMES 8—Pinhall, Othello, Oragons, Sopwith (by one), and more Color required;
 INFO 1a,b—(2 disks) Cooking recipes database with keyword/ingredent retrieval
 LANGUAGE 5—Turbo Pascal interactive debug

ger, pop up help, formalitiers, et cetera.

| DANGUAGE 7 - Complete Passal interpreter/compler. Great for learning Passal!

| ORGANIZER 1 - DesiMate; a Sidekack clone, and
the Judy calendar program.

| PRINTER 1 - Font and sideways utilities.

PRINTER's — run and sources, surfaces, species, burner makers, and more species — a collection of sevaluable general purpose ODS utilities. A must in UTILITIES 2 — More invaluable DOS utilities Too many to list here!

many to list here!

UTILITIES 3—A comprehensive set of debugging and augmostic utilities

NEW RELEASES/UPDATES

OCAO 2a,b—(2 disks) An advanced 2D/3D draft.

ing prog. 640k and color required.

COMM 1a,b—(2 disks) Version 2.4 of the everposels? Ornadem comm. program.

COMM 2a,b—(2 disks) Procomm 2.42, an excellent modern program with terminal entulation.

EQUICATION 2—(parm the Presidents, States.

(and capitals) and more item incorrect EDUCATION 5—Learn Organs, the Japanese art of paper folding. Color required FINANCES 3s, b—(2 disks) Express Calc 3.12, a powerful spreadsheet program GAMES 8—Striker helpopter affack, and Pisk,

GAMES #~STREET RECOGNER SILLAR, AND WORLD'S THE RESIDENCE OF REQUIRED WORLD'S TRAINED TO THE RESIDENCE OF TH

metus. Create oustom full screen menus. UTILITES 8—Utilities for formatting, parking, utilities 8—Utilities for formatting, parking, and optimizing hard disk drives. UTILITIES 8—Relvanced utilities including Doath, Esc. Hodos. Resident program utilities. UTILITIES 7—More Advanced utilities including MasterKey (undeltes lies from hard disks). WORD 1s.8—C2 disks) FC Write 2.71, a powerful word processing system, wogel checker.

Most programs have documentation on disk and request a donation from satisfied users.

Catalog evallable, add \$2, 3.5" formal add \$1/disk.

Catalog evallable, add \$2, 3.5" format add \$1/dlak
MicroCom Systema Cost of Herra.

S073 Enochs Ship/Handking \$1,00

CA Rea. Tax

Total Enclosed

(408) 737-9000 H-F 7an-Spn Set-Sun Sem-Spn

■ LETTERS

Winn L. Rosch replies:

with L. ROSEN repues: Thunks for the description of the tortures suffered by telephone signals. Note, however, that 9.600-bps moderns do actually work reliably at high data rates through the dial-up gauntlet, mostly through the use of powerful error-correction schemes.

After reading your supposedly compensive modern rounday article ("The Modern Modern: Bridge to the On-line World"). I was very disappointed to see that you failed to mention Andreson Jacobson, a company that has been in the data communications and modern business for the past 20 years, Al has an extensive line of feature-rich moderns for 2,400 bles per any of the other companies listed in your article have as many 2,400-bys models with a smany features as AI.

Raymond E. Jacobson
President, Anderson Jacobson
San Jose, California

PC Labs omitted the AJ modems from the article simply because the products arrived at our office too late for us to complete a fair and comprehensive review.—Ed.

Your review of modems has left me confused ("The Modern Modem: Bridge to the On-line World").

The article states that the Amazing Things 1200B and 2400B modems are identical to the ones sold by Leading Edge, PC's Limited, and OmniTel, and that they are, in fact, made by OmniTel. In the review of the Amazing Things 2400B, Mr. Wiswell says that in spite of the noise-tolerance problems, the 2400B is his choice for an inexpensive Hayes-compatible 2,400-bit-per-second modern. And in the review of the PC's Limited 2,400-bps, the reviewer concludes that the PC 2400 B is a winner. This version does not even include any software, although priced exactly the same as the Amazing Things and Leading Edge versions However, Mr. Wiswell also reviewed

the Leading Edge 2400B and concluded: "Considering this performance, I don't think the price is low enough to attract me as a potential customer..." How can the same modemat the same price be a winner

in two reviews, but too expensive in another review?

Dennis Weinberg

Northbrook, Illinois

Though the moderns in question all came from the same manufacturer, there can be performance variations between Individual units. In addition, the PC Labs line noise tests are only one of the factors we used to evaluate the moderns; some times are may perform better in real-world conditions than in the testing environment. In daily use, the Amazing Things, OmniTel, and PC's Limited models performed and PC's Limited to than the Leading Edge and were rated higher by the reviews.—Ed.

I would like to express my disappointment with the review of the Basic Time 2400 external modem ("The Modern Modern: Bridge to the On-line World"). The article in general was poorly researched, and some of the conclusions drawn were inaccurate. Furthermore, the reviewer chose to

be subjective rather than objective.

We feel we have a right to expect a fair and unbiased evaluation of any product that is submitted for review. This review was neither fair nor unbiased.

Charles E. Smith, Jr. General Manager, Qubie Camarillo, California

We challenge your review of our modern in the article. "The Modern: Modern: Bridge to the On-line World." Howard Marks claimed that because the Bytcom modern forces carrier detect and data terminal ready upon power-up, and because it has no DIP switches, it is therefore not Hayes compatible. In fact, the Hayes 2400 modern shares this default setting and has no DIP switches.

Further, the Bytcom supports the entire Hayes command set (with the exception of the M command, so we use the L command for speaker control) and also the Hayes Synchronous Interface (HSI). A clear majority of other modems in the material control in the support HSI, and therefore we believe we have perhaps the most Hayes-composible product on the market.

After conversations with Howard Marks, we at Bytcom believe that the TAS noise simulator was used improperly.





NEW!

\$89.95

Just Because You Need To Print Something Sideways... Doesn't Mean You Have To Turn Your Whole World Upside Down!

Introducing...

ING... Now, You Won't Have To Wait While You're Printing Sideways.

The Duet Decodes And Prints Spreadsheets And Text Sideways.
In The Background...While You And Your Computer Go Off In Other Directions...Together! We've Out-Sidewaysed
Sideways...And That's Only One Part of Duet!

was you in hearmony with your galades Easter floating Partie Contact Easter more frontier

Barrier Barrier Develope
Barrier De Première De la Barrier
Barrier De la Première De la Barrier
Barrier Des la Première
Barrier Des la Barrier
Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier Barrier
Barrier
Barrier Barrier
Barrier
Barrier Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Barrier
Ba

Duet and your spreadsheet... they were made to perform together.

logether.

You can work on one spreadsheet while Duet is printing another one for you. You can even continue working on a spreadsheet while Duet is printing part of it sideways for you. In fact, Dart lets you print spreadsheets, sideways or

normally, without ever booting up Lotus or Symphony! So you can even print spreadsheet files while you're working in your word processor. Whee you swear at your printer... does that help you remember how to get it into compressed mode?

Wheo yoo swear at your printer...
doea that he lp you remember how to
get it into compressed mode?
Due's pop-up menu allows you to select whatever your printer has to offer, compressed
mode, double width, letter quality or what-

ever. On laser printers you can por choose between landscape and por trait modes, select paper trays and much more. And you'll never have to memorize escape sequences to do it. Duet can make your word processor, apreadsheet or database report generator do things with the printer it in ever knew was

DUET IS A RESIDENT TOOL THAT GIVES YOU ALL THE PRINTER CONTROL
YOU'LL EVER NEED... FOR WHATEVER SOFTWARE YOU'RE USING!

Have you ever been forced Order your copy of Duet to

When you need to stack up a bunch of files to be printed, do you ever feel like you're just groping in the dark?

do you ever feel fike you're just groping in the dark? Duet spools all your print files into a visible qurue that allows you to see a list of whaf's waring to be printed, any time you want. You can change the print order, cancel files and individually configure print jobs for sidewayor normal print.

Power fallure? Prioter jam?
Anyone who's been around printers for
a while knows the feeling of hunting for a
power switch while paper files in all directions and the print head bore a hole in your
masterpiece. That's why Duct saves print
queues to disk. When you bring the power
up again, or clear the confletil out of your
printer, you'll be able to restart wherever you

left off... or even back up a page or two

out of your own office because someooc came to visit while your printer was hammering away? Duet lets you quiet your printer with a keystroke, and then start up again when it's convenient for you.

convenient to Fyou.
With all of it's power, Duet is so easy to use that in five or ten minutes, it will feel like as old friend. And like any true friend, it's never intrusive. Depending on how you configure it, Duet occupies from 60k to 128s of 8.Ab.

Order your copy of Duet today! Phone: 880-645-5501 or, in California diai 800-556-6099

Or mail us your name and address along with a check, money order, or your Visa, Master Card or American Express number and expiration date. "California realdents, please add sales tax (69%). For orders outside of the U.S. please add \$5. CSI, 756 Chestnust

Street, Santa Cruz, CA 95060.

Dealers and Distributors...please call the above 800 numbers.

side ways or normal print. If necessary. 1286 of RAM.

CSI is the original develope of The Spreadhert station, and the producer of the premier LAN electronic mall system; The Network Courier.

CSI is the original develope of The Spreadhert station, and the producer of the premier LAN electronic mall system; The Network Courier.

CSI is the original develope of The Spreadhert station, and the producer of the premier LAN electronic mall system; The Network Courier.

CSI is the original develope of The Spreadhert station, and the producer of the premier LAN electronic mall system; The Network Courier.



1-2-3 never looked so good.

Introducing SeeMORE ™ a powerful screen manager for 1-2-3® that expands your worksheet view with the push of a key. SeeMORE gives you a choice of compressed formats that double, triple or quadruple the number of cells displayed on the screen.

Install the SeeMORE program with 1-2-3 and you can build a twelve month forecast without stopping to scroll around. All twelve months appear on the screen. SeeMORE lets you see the bits Dicture.

_		•	2	4	7		*	72	-				-
10	K				- 4		ă.						
100	10			.21	10	tā	u	냽	10	10	13	13	k
100	ĕ	a	a	15	18	18	18	ч	'S	4	3	E	15
400	.3	9		,8	.1	J			,ē	J		Š	
100	9	¥		q	2	4	4		-	*			13
	ā	A	λ	- 5	Ä	Ā	Ä	3	ş	4	2	S	3
THE REAL PROPERTY.	- 11	Ś	2	3	2	3	3	3	12	48	12	8	15
- Same	.2	А	.2	18	.3	.3	.1	3	.2	ä	.ā	.ā	,3

Switch to reverse video.

No special hardware is required to run SeeMORE. All you need is a CGA, EGA, VGA, Hercules or compatible graphics adapter. SeeMORE manages the screen unifout interfering with the normal operation of 1-2-3. You can zoom in and out as you

Available through Egybead Software and other fine dealers. D Micro D, Softwal and Software Resource.

build and manipulate a worksheet – you don't need to exit 1-2-3 and switch to a new driver set! And SeeMORE lets you produce hardcopy printouts of any compressed screen with the push of a key.

Section Section	des des
Shifteen :	RECEIPTED BY
No.	
TEMPS	11111111111
DOM:	*******
To broad bears	
EE.	

Change background and foreground colors.

Get SeeMORE and expand your horizons. Works with 1-2-3 Rel 2 on the IBM PC, XT, AT, PS/2 and compatibles. \$79.95. Not copy protected. Symphony version coming soon.

	CGA	EGA/VGA	Hercules
Normal	80 x 25	80 x 25	80 x 25
SeeMORE: • Medium	91 x 28	106 x 43	120 x 43
• Small	106 x 33	128 x 43	144 x 43
• Tim	128 x 33	160 x 58	180 x 58

ributed to dealers through Ingram, Kenfil, CIRCLE 282 ON READER SERVICE CARD SeeMORE is another fine product from Personics, maker of the award-winning SmartNotes™ program.

,	See ^{MORE}	
	Please send me copies of SeeMORE at \$79.95 each plus \$3.75 shipping (\$12 outside USA and Canada). MA residents add \$4.00 sales tax.	
	Payment: VISA MC AMEX Diners Check	
1	Calls #	
	tor set People	
	Note	
B	coess	
	To order, mail coupon or call toll-free In MA 800 - 447-1996 Nationally.	
	800-445-3311	
	PERSONICS CORPORATION 2352 MAIN STREET CONCORD., MA 01742	



Epson® Printer, 1987.

Representing a line of computers and printers that are the benchmark of reliable performance. In fact, Fixon printers have been in Justiness tonger than most printer companies. Today, in every type and size of business, you'll find Epson printers of every size and type. From high speed, high quality dot matrix, to an astonishing, and affordable laser printer. Epson. The most famous name in printers, twenty years running.



WHEN YOU'VE GOT AN EPSON, YOU'VE GOT A LOT OF COMPANY."

■ LETTERS

[TAS is Telecom Analysis Systems' programmable telephone network simbone network simbone network simbone network simbone network simbone network simbone network netwo

On the subject of line-noise, it has been recognized that the CTS signal processor on the Bytcom modern runs 20 percent "cleaner" on noisy phone lines than the Rockwell SP used by virtually everyone else, including Hayes and Multitech. We have signal-to-noise charts (one from Rockwell itself) to show this, and any jin-terusted readers can rull us to eet onies.

I submit that the foregoing refutes Mr. Marks's claim that we are not Hayes compatible and also qualifies the Bytcom as an "impressive" modern. That is especially true when one considers its low list price and the fact that there are thousands of Bytcom users that are completely satisfied.

William T. Bagley, Jr. President, Bytcom San Rafael, California

Howard Marks replies:

Mr. Bagley is correct when he states that the Bytcom modern is comparable to the Hayes 2400: both lack DIP switches and have similar default settings. I still believe that all serial devices should follow the EIA Standard RS-232C; this is the standard I referred to in my review.

The one command from the Hayes AT command set that Bytcom doesn't support—volume control—is not very important, except that since the Bytcom modern has no volume knob, you can only turn the speaker on or off. I did not consider HSI in any of the reviews I did, because to my knowledge, nobody uses it.

The PC Labs modem tests were created with the participation of the technical staff at AS. The tests were properly and fairly implemented; the simulation unit was set up to provide attenuation similar to that found on actual phone lines. The testing parameters were clearly defined in the magazine and applied equally to all of the

products. Of the 87 modems tested, only 5 could not perform the tests.

Furthermore, Mr. Bagley's comments about the CTS and Rockwell chipsets don't correspond to our test results. Our experience showed more variation between different Rockwell-based modems than he states as the difference between the Bytcom and the Rockwells.

CORRECTIONS/AMPLIFICATIONS

Avatex does not make the EMP Automodem 1200HC as mentioned in the article "The Modern Modem: Bridge to the Online World" (PC Magazine, Volume 6 Number 9)

Point Five supports variables, rational numbers, timediale, prodefined constants, summations, iniciding prodefined constants, summations, iniciding version array functions, and manual computation control. The program also does manual and spreadsheet input or import equations, manual and spreadsheet input or import and special-sheet data in the put or import, and the set of file and special-sheet output devices. In addition, Point Five also allows seeping through a range of numbers in increments of one stomers, and it supports the condition and its supports the conditions are ments.

"If . . . Then" and "If . . . Then . . . Else" ("The Scientific PC," PC Magazine, Volume 6 Number 7).

Gauss supports 15 printers and plotters, including the IBM Prowriter, Epson, HP Laserjet Plus, and Corona laser printers, and the HP, Epson, Watanabe, and Houston plotters ("The Scientific PC").

HOW TO WRITE TO PC MAGAZINE Do you have a comment, compliment, or criticism about something you've read in

PC Magazine? A question you'd like to open up to other readers? Then send your opinion on paper or disk to Letters to PC Magazine, One Park Avenue, New York, NY 10016, or through MCI Mail to

NY 10016, or through MCI Mail to PCMAGAZINE at address 157-9301. All letters become the property of PC Magazine and are subject to editing. We

Magazine and are subject to editing. We cannot publish letters that do not include a name, address, and phone number for verification. We're sorry we're not able to answer letters personally.

NOT THE SLICKEST PD/SHAREWARE LIBRARY JUST THE

BEST!

Author and noted expert on Public Domain and Shareware software, Alfred Glosbrenner, recently wrote:

"I have read with pleasure Nelson Ford's Public (software) Library newsletters and, having just undergone the ordeal of looking at the 700 disks of [another library], I can appreciate as never before the incredible amount of work put into maintaining the P(S)[, collection.

"Of course, part of the problem is that there is no real consumer awareness. - Obviously the other library! feels no need to clean up its act and its patrons don't know any better. If only there were a way to combine the meticulousness of your poeration with the nolish of theirs."

It's true: at the P(s)L, we seldom have time to work on our "slickness" because we are too busy making sure that all the software in our library is well organized and up to date.

In addition, the P(s)L Newsletter is the only monthly source of information about virtually ALL of the new and updated public domain and shareware programs as they come out, plus tips from users, how-to articles and more.

Increase your "consumer awareness" about what most experts already know is the highest quality PD & Shareware library in the world. For a FREE newsletter, call or write the

PUBLIC (software) LIBRARY

P.O. Box 35705 - PS Houston, TX 77235-5705 (713) 721-5205 MC/Visa

Subscription \$18/year. Text of 1985-6 newsletters on disk for \$5/year.

10 BIG REASONS IT'S TIME YOU CHANGED YOUR EDITOR TO BRIEF

FUNDAMENTAL TRUTH. If you are a programmer, you use your editor more than any other sool if it un't the best, the fastest, the most versable, the most productive...well, then neither are you!

OUR ENTHUSIASM. While we do not publish BRIEF we wash we did. We sell so many BRIEFs that we've been advertising it non-stop since it was introduced two years say. We're not alone in our enflusiasm. There is no end of accolades from other admirers:

BRIEF Encounters

"The word is getting around that BRIEF is simply the best text editor you can buy" John Dvotals in Infoworld

"In the last five years, only a handful of applications have altered the way we use microcomputers. The 'unnears' impact is aetounding BREF in a 'winner' that will most definitely change the way we develop application software." Data Based Advisor.

Ton sormate. Data based values and efficient editor with capabilities that are truly useful if you're a senious programmer or developer of commercial applications, the BRIEF/68/EEF package is one of the best investments you can make "PC Magazine, 7/86

"Every time I've mentioned text editors I've got a raft of mail urging me to try Brad. Now that I've tired it I see why it has windows boy, does it ever have windows! it will do just about mything you want it to look no farther. recommended "Jerry Pourmelle.

Byte 12/96

Best edger of 10 compared

Dr Dobb's Software Tools

WINDOWS ON THE WORLD, Why the excitement? First, BRIEF's architecture. Any number of files of virtually any length can be open (Start BRIEF with "*.*" to prove it) Open as many tiled windows as fit the screen-over/under and side-by-side-to work on any of your files. Open, close, and resze windows as you go In each window, full screen or tiny, all editing techniques are at hand-high-speed cursoring, paging up and down, horizontal scrolling, optional word wrap Load the same file in any number of windows to view different areas simultaneously. A change in one changes all. Out and paste text blocks between windows and files, or into but fers for later recall. All files stay in memory, so you can always go back to snip some more

UNDO. NOT UN-DELETE. Don't confuse the two. BRIDT doesn't just actually one purposed of frecent delethon contains the purposed of frecent delethon contains the purpose of the purpose of the contains and the contains and contains that affected the curron or the text. Warth 1 undo 3 global replace, for example Uncentry 1 cett back up 300 times, all the way to the begraning of a senson. "Works like a dream", and The Courant

SHELL GAMES. Leave RRET, run your compiler, print out the error mea. Run you compiler, print out the error mea. Run you can load an BRIEF of the service of the service, and to all the service of the servi

KEY WHIZ. You can reassign BRIEF's command issyfints to whatever keys you're used to, even your old editor's, so you don't have to send your fingers back to school. Macro execution can be assigned to single keys Cr you can tell BRIEF to haten while you tag out a compiler rottime. It will save and playback fashfully, a shortcut macro without a smalle line of codino.

files you were working on.

MULTI-LINGUAL. BRIEF's macro language is perfect for writing formatters for your language which indeed, match up parentheses and brackets, and set up statement templates for fill—in BRIEF comes with C language support already built in Others have written macros to format Pascal, BRICL LISP, Proto, FORTRAD.

QUICKER PICKER-UPPER. Lockup for something? SRIE? has full UNIX*.

Be expression search tools to brings
sings with widotacts and "7" character maskup, size. Bit should search to case or steer
vering characters, (sexual) to mutch all vowels,

[e.l.-el) to match character strapes, beginning

[e.l.-el) to match character strapes, beginning

content machine and residences of characters of the character strapes.

10 REASONS 11 THROUGH 20: 11. BRIEF comes with a color option. You can select your own color scheme anytime. 12. It supports EOA's 43-ine

dBRIEF. The Power Environment for dBASE Programming

Many worthy unlay products supply needs that dBASE* a programming language doesn't-dUTILIM, dIT-LOW TM and a host of others Trouble is, you have to use them separately, then combine their output and your dBASE program lies

No longer dBREFTM, wither in BRIEF's macro

language, grabe hold of BREET and turns it into a compiler GBASE I and fit Plus peoparating domain. Using BREET a underlying shell capabilities and its own interfector, GBREET for in undestread using bitmanes, plus GBASE inself, and lank to the ClupperTMF Poubses *I'M and lank to the ClupperTMF Poubses *I'M and Quickelver compilers. All with GBREET still loaded and running the show it can do what BRIET still loaded and running the show it can do what BRIET still loaded and running the show it can do what

 Convert a screen layout into dBASE code for interactive data entry
 Display dBASE file structures in windows,

a great convenience alongaide your program tiles

• Expand keystrokes into full dBASE

Indent automatically for clerpic display
 Creare distabases, index files, invoke Astronthe s dPORMATTM and dCONVERTM.

"Simply marvelous programming environment for wining and editing dBASE programs", PC Magazine, 1765. Source code included: Bequires BREF f 32 or later and 384k, 512k to run dBASE within dBREF, 540k and harddak

mode and con desplay up to 188 into 1003. In 188 into 1003. It was 188 into 188 into 1880 in 188 into 1880 into 1880

WHOLLY MACROS. Much of BRIEF was wreten in its own macro lan guage it is that powerful! The language and its compiler come with every copy, as do many standard macros, with source code for learning by example it is a complete language with conditionals loops, recursion, global and local variables, even data types it can control files, windows, and the keyboard. It has structure, 32-character variable names, and-not at all like 1-2-3°'s currenform—is en ly readable. like a hybrid of LISP and C With it you can develop a library of routines to power BRIEF your way.



NEW VERSION 2.01 lagragages * Regular expressions match over multiple lines • Faster undo & expression search * Activity reserved liber marking * Optional borderiess windows * Supports displays with 127 lines, 255 chairs * New documentation with uturalist on regular expressions and macros 30 DAY TRIAL with no questions asked money-back guarantee!

* Bred needs 195k normally, 320k for comple feature *Product must be seturned as recalable con-

800 PC-BRAND

List Prices: BRIEF: \$195. dBRIEF: \$95 BRIEF/dBRIEF Combination: \$275.

PC BRAND Prices: CALL

PC BRAND: CAREFULLY CHOSEN PROGRAMMER TOOLS 30-DAY MONEY

WINDOWS RESIDEN FOR DATA M'soft Windows Compatible

windows for Data TM adds the przazz and practicality of window parts ng for entering data in your applica tion. Powerful field-level functions let you specify prompt string, field length, data type screen location, picture, receiving vanishie, etc. Field options can require or prevent entry, cause beeping on invalid entry or overflow, anach field specific help. messages functions to call for entry valida ton You control which keys clear a field to next or prior fields quit etc e Windows for C subset has all the ed windows, defined in C struc tures for reference throughout your ara

gram, can be made either to pop up or permanently overwrite the screen. Rou

tines scroll and highlight lats with arrow

keys read and scroil ASCII files both ways

in windows. Logical treatment of video at

inbuses permits unchanged programs to

age in separate modules. Only those used

are linked Only buffersholding on-screen

oranty obscured windows py RAM, others released dynamicsly

lear documentation.

Compile dBASE for Speed, Protection C hpperTM turns lumbering dBASE*

submerged from public view, you can distribute your compiled application with out royalties, and your customers don't even need copies of dBASE The Spring 87 Clipper offers index files companible with dBase III Plus, and networking capaor networks supporting DOS 3 I with no restrictions on number of users. Clupper offers arrays, menu-building com

user-defined functions context-sensitive NEW!

McMAX From Na Like dBASE for the Macintosh M cMaxTM is like running dBASE on the Macanosh it combines an easy to use menu driven ASSIST mode using the Mac interface, an interactive command mode like dRASE at the dot nguage fully companie with dBase III It gives you the power to create dBASI language applications on the Macinton and transfer back and forth to the IBM® world McMax accommodates up to 16

ord. 255 characters per field and up

CLIPPER From Nantucket help techniques for applications, a de bugger and it supports Expanded Mem ory it goes well beyond dBASE with 024 fields per data base and 2.04B Clopper has the power to save and restore multiple screens to and from mem-ory variables. You can also create overlays call object modules compaied in other to link with your applications Priver and Sexubitry make a the *1 di Last \$605 PC Brand Call.

dBASE compiler MICROSOFT C 4.0

A Great C Battle Rages and You're Winning I bundles a source debugger and a ory model permitting single data obsects larger than 54k, but what is really impressive about Microsoft C are the benchmarks reported in Dr. Dobb's Microsoft runs away from a field of 12 wining II of 27 benchmarks
The CodeView?M debugger uses windows to show everything on one screen source alongwide disassembled object, variables, stack and registers Drop down windows obviate learning ger that puts the rest to shame" said

BACK GUARANTEE We refund the purchase price of any product returned weing 30 days in en producine cinieu wing autogoine from the production from care even try out programs them-selves (product code begris with E. TorLithrough N even if it means breaking the disk seal Some developers do pose limits so lor prodducts beginning with other letters opening sealed disks construes ac ceptance But you can at least review the manual. There's just nothing stop ping your buying from PC Brand

port for another thateen, and boasts alternate math packages for speed ver sus accuracy, with or without 8087/ 80287 chips Both Imper and Impary manager are part of the package, as is the 'make which knows how to rebuild any size It is reportedly used by Lotus Astron-Tare and, fittingly, Microsoft Astron-Tase and stringly pactions self to develop Windows Dobb's calls if "the best MS-DOS C development any kind of program conceivable

to 32 files open concurrently. No cop-protection Lat \$295, PC Brand Cult Microsoft C has five memory models Ask for G0500 for code and data, plus non-library sup-Windows for C HALO GRAPHICS C-TREE & R-TREE B-Tree File Manager Now Has Report Generator

SYSTEM Multi-Board Graphics Library tree TM is the only major b-tree file The premier graphics library that got the ball rolling for PC-based graphics and has grown so ommipotent that it supports over manages with network support in the standard low-cost version it allows multiple users to access an index file simul 25 graphics boards — including IBM's EGA and Nr 9 Revolution's haves senies raneously even during updating. Rec locking routines are provided for DOS 3 x. UNIX and XENIX C-tree even comes in C source code report for Latting March Artes (186 yet there are no royalties. Source sticks to K&R, so Citree is portable. Tests in What does Main-Halo do? A does to the many environments prove a Cities permits any number reset drivers so distributed program can run on amything. Wonderful value for single tree permits any number of keys for a data file—alpha numenc even license. Costly poyalties though for floating point it handles files with

varied record lengths and levens multi ple keys in one index füe. Has both high level ISAM routines to handle details.

with minimum coding, and decfindings into new longal records, sort step-by-step functions you can access them, calculate new fields and columns directly. In short, you get the works tabulate by any number of control broaks. The script files show a visual representation of the report grade for I-tree; thousands of other users (and

now have a suddenly expande easy creation and maintenance of even elaborate layouts introcTM comes in ability to produce ad hoc reports from ties maintained by citree (v. 4.1 and source boasts the same portability as up) Just link a file description to the tree library, and all you need is at and fits any co number of report scripts with no further C coding. Reports can access data in r-tree F066 several files select on criteria son the

Il a free dBC Lattice Library Maintains dBASE Compatible Files With the Power and Speed of C

of 90315 & Lang. Ler *300, We. *219. With Dr. Halo

standing paint List 440, Us 1299.

d BC™ links C to dBASE. It creates and marrians files and their indexes which Use dBC for custom work for clients, or on its own. It's a complete ISAM sile ly replicate dBASE file design dBASE can read and update them. And the reverse dBC can use any files created by dBASE. Now C and dBASE can operate on the same data bases interchangeably That opens up the widespread culture of dBASE installations to exploration by C programmers. Top that market, award the resident dBASE languages and gain the advartages of C with this single product dBCs functions parallel all dBASEs file. harding commands, many decomposed to give closer control. Each backed by demo source files on disk

manager for C whether or not dBASE will be used in tandem, supports all four memory models, and can have soreen undex and data files open. Big discount to buyers of both dBASE II and III versions Specify Lattice, Microsoft, or DeSmet Les PCB TOOR Dw HEART II LCCE With Source LOTTI For dBASE III With Source

are interchangeable between any

POLYTRON VERSION CONTROL Source Code Control for Any Language

PVCS allows programmers, project managers, librarians and system ad-ministrators to control the proliferation code in software systems. Independ ent programmers, the leading soft ware publishers and LAN companies, and hundreds of Fortune 1000 compa mes rely on PVCS to store and retrieve multiple revisions of text & maintains a complete history of revi sions as an "audit trail", generales status reports, and uses intelligen "difference detection" to minimize daik space for each new versor On Corporate and Network PVCS so multaneous changes to a module are mergod into a single new version. If changes conflict, the user is notified. The "Logfiles" used to track changes

Corporate PVCS is for multiple pro grammers it includes "branching" to maintain code when programs evolve on multiple paths. Personal PVCS offers most of the power and Sexibity of corporate PVCS, but excludes mulple programmer features. Network VCS is the Corporate version for LANs File locking and security levels can be tailored to each project

PolyMake Still using a prehistoric Make? Step up to PolyMake, the most opular and powerful Make utility popular and powerful sease user, Most flexible macros of any Make Now integrated with PVCS and Poly Now integrated with PVCS and Poly Librarian for faster performance and

ose configuration manageme

WHY US?: Latest versors of all products
Everything listed is in stock Shipped 24 hours or sooner • No surcharge for credit
 Shipped 24 hours or sooner • No surcharge for credit - SHADOL 24 HAUS IN SULFED TERMS? On the spot card or OU purchase nEED FERMS (OFFIRS SUC gredit to most public companies, government, educational, medical institutions LOOKING FOR tional, medical institutions LUUKING FOR SOMETHING? We can get many more products – just aski NEED MORE INFO? Our Catalog and literature cover just about everything.

WHAT PC BRAND

That's (800) 722-7263. In NY State call (212) 242-3600 PC Brand, 150 5th Ave., New York, N.Y. 10011-4311 Telex 667962 (SOFT COMM NYK)

For Orders or Literature, Call Us at

TODAY's TOP QUALITY AIDS TO PROGRAMMING PRODUCTIVITY

SUPER SOURCE

Two great debugging and documents tion tooks that support C. M. Pascal, BASIC, and dBASE Source Print Author Alan Simpson writes: The best

werall debugging technique is to draw lines to connect all the IFs and DO WHILEs etc. with their ENDIFs and ENDOOS Use a pen or pencil to Well thanks, Alan, but we'll let Source Print do it for us. It draws vertical lines ings in a world display of your program's organization And it can print programs with page numbers, headings, line numbers undent automatically throw in a table of contents and a crossreference index. "Occasionally a utility comes along that makes a programmer's life much easier Source Print is such a

..and Tree Diagrammer Tree Diagrammer prints an organization

ing the hierarchy of function, procedure. and subroutine calls. Shows at a glance what routines call each other for clearer this important documentation tool. Let \$55. Ours. \$45.

BASTOC Translates BASIC Into C OPTIMIZES For e triling pince, BASTOCTM moves truckloads of BASTC code over to C. It is a translator which takes in Microsoft Extended BASTC and emits pure K&R.C.

for Microsoft or Lattice Structures ever convoluted BASIC code Optimized to dramatically reduce execution time Converts to integers those variables in

BASIC programs which do not need floating point. Where BASIC uses full Assormed statements to increment counters BASTOC converts to C's com pact form Dynamic string allocation ends BASIC's cutstonic garbage coll-tion. Huge worksaver. Ask for S0375, Last \$496. PC Brand. \$399.

PANEL PLUS Library Source For Complete Portability everything produced is highly portable Not like screen managers that deliver

There are no screen design and data entry tools quite like Panel Plus Design a screen under program control, use by field, then pass if to Panel's code generator which delivers C source code Options style the code to you compiler's liking. Then do whatever you want to the source afterward. The code calls Panel Plus s function library, but

object libraries leaving you to write the A snale staves described have 1000 fields stacked as visual overlays up to levels deep or as pop-ups. Each word-wrapped scrolled both ways if larger than its view aperture, assigned

certain characters, or match a picture number ranges etc -or against you wn validation routines Customize Panel's test utility with these routiner Panel Plus will operate in graphics mode via irrerlaces to graphics prod-ucts it supports. Handles EGA's 43 line screens operating systems Major too for the serious developer

Shopping List for the Power Workbench C UTILITY LIBRARIES

program" says PC Magazine List \$75 Ours \$80

telligence by Intelligence Were each II by Intelligence Were Development Software by EXSYS YS Rustlime System 12+ by Level Five Research y Level Five Research Compiler Intelligence Were

AI-LISP LANGUAGE
IOCUSP by Integral Quality
IOCUSP by Integral Quality
Microsoft LISP Common LISP olytron Systems P PLUS from Solution Systems

nes LSP PLUS from Solviron Systems
Al-PROLOG LANGUAGE
AL-PROLOG LANGUAGE
TACTIVE Prolog Futor from Solution SysROLOG Language Primer LOGICWARE
ROLOG PSO by LOGIC WARE
LOG PSO by LOGIC WARE
LOG SHEWARE
LOG SHEWARE
LOG SHEWARE
LOG SHEWARE
LOG PSO LOGIC WARE
LOG SHEWARE
LOG PSOLUTION SYSTEMS
LOG PROLOG TO SOLUTION SYSTEMS
LOG PROLOG TO SOLUTION WIT TO
LOG PROLOG TO TOOLDON BY BOTAIN WIT TO
LOG PROLOG TO
LOG PROLOG TO
LOG PROLOG TO
LOG PROLOG PROLOG TO
LOG PRO

ASSEMBLERS & DEBUGGERS
inced Trace-86 Morgan Debugger
rite Debugger by Lattice, zource laws
onth Macro Assemblar with Unitaries
MS by Phoanis, Macro Assemblar
scope I Bedugger The Periscope Cotope II anth NMI Breakout Switch

ge II-X software only ge III with Advanced Board New BASIC LANGUAGE oft BASIC Interpreter for XENIX oft Quick BASIC Compiler 30

C COMPILERS

5 PLUS by Compuler Innovations

16 C Compiler Innovations

16 Compiler tow Lattice

16 Compiler by Mark Williams

16 C Structure Level Debuggler

16 C Compiler by Boriend New

C INTERPRETERS
-Terp by Gimpel Software
satart C by Rational Systems
interactive-C by IMPACC with debugging
UNIC Professional from Lifeboar

COMMUNICATIONS ICH Menager by Blasse for C or Pascal

Blaise C Tools 2 C Food Smorgesbord by Lettice C Utility Library by Essential, 300 functions Commisse Functions by Greenleef Software COBOL LANGUAGE
MICOBOL see Riven McFerfand Prod
loreselt COBOL Compiler
loreselt COBOL Compiler for XENIX
lores Foods COBOL see Micro Foods Prod

dBASE SUPPORT
BRIEFIGBRIEF Bird for DBASE III
CUPPER Irom Nantucker
McMAX. dBASE for MAC from Nantuckel
dB..dBASE to C Tenstelor by DESKTOP Ar

with Library Source Code
with Full Source Code
dBC from Lettice meinteins DBASE liles

OEVELOPMENT TOOLS BASTOC by JMI, convert BASIC to C BASIC'S functions added to C Report Option Softcraft Bireve Report G Xirlere Softcraft Query Unity for Bineve Code Silter Profiler by David Smith
Den Bricklin's Demo Program Prototype
LMK from Lattice, "make" like UNIX
Microsoft Window Development Toolkit

PILE MANAGERS Btriava Natwork by Softcraft C-Tree by FairCom - no royal R-Tree by FairCom Raport G C-Tree & R-Tree Combo by Fi InCom Report Generator free Combo by FaurCom ple user DBMS by Raime ta multi-user DBMS ich Sort Can sort Btnave frias

995

175 117

PORTRAN by Myan Mcharland RTRAN Libraries...by Alpha Computer posott FORTRAN Links withcrosoft C crosoft FORTRAN for XENIX entilic Subroutine Peckage by Alpha Easentiel Graphice Escential no royaltie GSS Graphica Essential no royaltie GSS Kernel System by Graphic Software GSS Kernel System by Graphic Software Help In-

with Dr. Helo II ... MICRO FOCUS PRODUCTS icro Focus Level II COBOL #:Anim rsonel COBOL

MODULA-2 LANGUAGE MODULA-2 Apprainfice Pkg by LOGITECH

MODULA-2 Megic Pkg by LOGITECH MODULA-2 ROM Pkg & Cross RT Debug MODULA-2 Window Pkg by LOGITECH MODULA-2 Witzerd's Pkg by LOGITECH O'THER LANOUAGES & UTILITIES Source Print. Source cods formetter intelligence of the Dispersion of the

Adventage C** by Linkboot Assoc

PASM86 Mecro Assembler
Plais Pinen, view das meneger
Plentese Pac au products. New Proc
Pflente Pinen, candown on energizer
Pflente Pice Candown on energizer
Pflente Pice Somform on energizer
Pflente Pice Somform on energizer
Pflente Pice Somform on Linkboot
Pflente Pice Somform on Pflente
Pflente Pice Somform on Pflente
Pflente Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pflente
Pfle

LINIX "hat"-elike lel Binary File Communicator PTel Binary File Communicator

POLYTRON PRODUCTS

PVCS Corporate. Source Code Control Syst

PVCS Personel

PVCS Network

Polytlabat Complete Make Utility

Polytlibration Library Managar

Polytlibration Eurory Managar

Polytlibration Eurory Managar

llyUbrarian II Library Meniaer yShall UNI-size Continent Shell yXREF Complete Cross Raf Uthirly yXREF One lenguage only yBoost 7he Software Accelerator yBoost 7he Software Accelerator yDeek III Add Generatron Desklop Org yDeek III Add On Tools PROVIDER IN COURT OF THE PROPERTY OF THE PROPE

SCREEN GESION Lettice, UNIX screen design

with source.

Panel Plas by Round Hill, no royellies. New View Menager Sec Dry Blusse.

Visemin C. by Creative Programming.

VC Screen by Creative Programming.

Windows to C Vermond Free Programming.

Windows to Data includias Windows for C Ziview Data Management Consultative Consultation.

195 149 295

ZView Date Mempement Consultants

EXX EXT DOTA

Brief from Solvinon Systems

Brief from Solvinon Systems

Conder Edite by Conder

Edit by Emerging Rech. Multi-screen

Epition by Lugeru Software, Nee EMACS

FrisTime by Sorves Richnology. C synitx

Kott. by Mendiniti, similar to Andi

Lott. the Lattice Screen Editor Multi Wind

PRICED TO SAVE YOU MONEY. SHIPPED FAST ANYWHERE.

dBx: dBASE AT THE SPEED OF C Translates dBASE Applications to C

You dBASETM programmers know what an expressive and readable language dBASE is It's a very comfort able development environment. But the price is debased performance. Even compiled dBASE doesn't offer the speed

ESSENTIAL C UTILITY LIBRARY

400 Functions, 30¢ Each You've probably seen the speed and power of Essential's C function is brary without knowing it Software greats have been using it for some time to give today's top products pasaz and panache Now grown to 400 functions Essential's collection features routines to produce popup menus, save and restore screens and windows to disk or memory in as lif tle as 1/10th second, and the fastest video curput available. Screen handling covers acroling paging, word processor functions to insert, delete and clear to end of lines or screen. Library has a com-plete set of 50 business graphics functions. 40 string handlers. 28 functions for date its DOS interfacing functions offer dask error trapping to keep DOS from intruding on your program, and directory and file management with file creation file search using wild cards, plus accoun

sample programs that demo library functions. We have versions with pre-built libraries for all well-known C com pilets and a source code librarian is supplied for rolling your own Lat PC Brand \$185 \$119 \$290 \$183 shorts \$185 \$125

with Breakout Debugger \$250

ZVIEW Screen Design Aid

A complete package for screen deson with full windows manage tent as a bonus! Easy creation of screens with complex validation, such as range checking or required/option al data. Powerful Screen Paint utility for creating or editing applications screens. Built in security levels, set at run-time, control read or read/write access by field or screen. Automatic help screen processing for run-time aid per field or screen. Applications regain control during field tabbing. allowing run-time on-screen transaction processing or flow control. Run-time ctions include Screen Read and conversion from screen image to data storage. Field Editing. Help Screen. Processing, even a capabulty to change any field characteristic at run time, plus Window Push Pop and Scroll

The developer of the Condor data

base system has come up with an Sappable editor with all the features you could hope for especially a price The answer is dBx. It translates dBASE.

C. It offers that's light as a feather. No matter your language, the Condor Editor gives flight lapping, or split-to bring multiple files the screen for smultaneous editing united notepad buffers to store intermediate scraps. The editor has search capabilities to identify all files containing

dBASE Take every application all the way to completion Then use dBx to translate if top to bottom to C source code and compile if
There age other advantages C is con-The DOLLAR able, even to other operating systems like UNIXTM/XENIXTM as well as to the is ON SALE! Macintosh or Amiga dBx is the gateway prices have plunged! for your applications to places where dBASE cannot go (Library source needed for non MS-DQS) dBx has its own file manageme for angle user, but links to major C file and dBC-for both 97.00 compatibility with dBASE files and multi-Bindhas Data user support And you'll need a C com-paier. We have everything to get you Yen 78 500 under way, including good advice. So

call us when you're ready to put to C dBx \$ 350 \$296 with Library Source \$ 350 \$466 with Full Source Code \$1000 \$865

that some users require from software these days. The kind of speed offered.

by software written in the C languag

advantage over the next dBASE pro

grammer But not by converting every-thing you've ever written to C including

after, keep right on writing in

rumber expry date cardhold or's name and address Or Call for special diffix Translation System ing with includes dBx. C compiler. and File Manager GSS GRAPHICS SYSTEM

G SS™ has seconfigured two compo-nents of as comprehensive graphics ools to conform with the ANSI Computer At the heart of the system is the Develop ent Toolkit which contains all language boards, mice joyaticks, tablets, printers, nintees rameras, and more Drivers ho

and bitmaps used by raper inout devices (scannes) to insulate the application per cram from concern for device idioximosaci No one else has implemented COI that generic, ign switch givers and the same program will drive a different device. CSS Kernel¹²⁴ conforms to level 2b of ANSEs Craptical Kernel System (CKS) and consars all as needed draws and language bindings. Kernel has macro level tools to draw and color an obsect, store the

object on its own, as well as segment it. transform it, etc. So powerful, a single command may represent several score lower graph and chart generation and their cap tonent hand applies and oranges, say "pe" and it bakes the numbers into a

ignstible display for screen or plotters. Kernel and Plotting have rooks to convert mages they create to ANSI Computer. Graphics Metallies (CCMs) a injurious tandard for storing every form of graphs

The CONDOR EDITOR SON WITH COMPILER PURCHASE

Outside the United States? Our what has happened to prices of programming lools in these major currencies. 2.280 We ship anywhere! So lake advantage of a bargain Phone or fallow your order now For credit cards, we need card

wire funds (see "Payment" tow) We ship immediately. Leave the Device Driving to GSS ANSI COL STANDARD mage as data The Metalile Interpreter reads the contents of a CCM and intenprets a with full CCI capability for re

> Quality polityage* IBM thinks no They sell the GSS senies under their own label GS010 COI Dvipeni Tbolkir 496 GS020 Kernel Svotem 496 CSGS Kernel for IBM RT 1796 CS030 Ploting System

GS040 Metafile Interpret BTRIEVE

Oueen B-tree File Manager Abdicates Royalties

T bere's no longer a tithe to incorporate
Bitneve⁻¹⁶ in applications, a welcome
proclamation of rovalizes would man your profit margurs. Browne takes complete charge of all file creation, indexing, reading, writing, insertion, deletion, space ngtr mothe language you use unerlaces to C Pascal, BASIC and COBOL with samtile programs in all four, come with each

Brieve has mainframe specificational its balanced tree indexing scheme finds any key in a malion in four or less accesses. Files may have up to 24 indexes, fixed record length to 4090 characters, indexes up to 255 characters, files of 4 billion bytes

a sought for keyword and its location is those files, ideal for tracking down system-wide use of a function or varia ble All DOS commands are available from within the editor And it has either menued commands in desktop style or

single keystroke commands once mesus become obtrusive. Plus Condor claims the most extensive help facility of any editor should a new need come along And for Condor 3 database management users, the Condor Editor cross reference command and form files Let \$129.
PC Brand \$116. Together with complex purchase the price drops to \$56.

BLAISE C Tools Plus N othing pays you back quicker than a function library, and Blaze has

long been known as a grew one
C Tools Plus, the top of the line, now
has over 200 functions. Meture, both, predominantly in C, they polate hardware dependence, come in source and library, with no royalty. The rundown Screen Handling either via BIOS or direct to video adapter, supports ECA 43-line mode and multiple pages, twin montors. Windows any number, stack able, writable, wordwrapable, and erasable. Interrupts well known for in erasable interrupts well known for a terrupt service routines in C, from which you can now access DOS func-tions Directories Create, change, or search directories rename files, get and change their date/times. Memory control DOS memory allocation, load a "child" process alongside your pro gram, even create memory aven programs-and remove them Strings international money, dates and character

several tasks with a single call. General BIOS and DOS gates for direct access, memory copy, speaker control a goes on Our complete Base line PC Brand C Tools Plus Asynch Manager Turbo Asynch Plus \$100 Turbo Power Thois + \$100

ASK US ABOUT XTRIEVE & REPORT OPTION

Can even extend a file across two drives even two hand disker Version 4 x speeds DOS interaction for large multiply keyed files, enables variable length records of variably an length, veniles accuracy (optionally) with read after write, useful in gritty or vacraments, offers password and data There's also Xtneve, for Btneve file in

quary and data manipulation, and Rineve for report writing. All three in versions to any network that supports the MS-DOS 3.1 file shanng function

S0652 Network Version For Orders or Literature, Call Us at

et We honor MasterCard, Visa America

une myahes

Licenses: Each price is for a foreset ouse aproduct on a single computer and does not constitute as ownership. We will inquirit for you about site becritise. Such place as otherwise indicated on where of 180 km in Product Code, product into the sized to create programs for distribution without only in payments or authorized lacenses, provided and programs of on of substationally replicate the doctor product of on of substationally replicate the roducts thermalves or particular to the standard products or designed to operate with the IBM* PC XT or AT note? PC OCS and require no more than 128 of AM university and Not IBM machines used the standard Not IBM machines used. RAM unless indicated. Non IBM machines using MS-DOS contact manufacturer about precise of ferences so we can advise. Returns: See box page one Defective parts will be resolved. Please call for authorization to return a negligible of Please.

Versons for Lattice, Microsoft and Aziec C. Automatic free updates to

registered users No run-List 1245 PC Brand 1375

Payment: We noto respend to that American Express (no surcharge), checks in advance or funds weeds PC Brand, do Chemical Bank, 106 East 86:31. New York: Account 034 016056. COD (U.S. only) for cash, money order certified check (no feet. NY Stata add salm fair. Purchairconders.) month list penalty hereafter. Strölligis (BUS 2N Pripping & Handling: US UPS Surface 1st recound 56 each and 53 UPS 2nd Day An 1st moduct \$10 each and 6450 UPS New Day Anon widers Express 1 2 Day An 1st product \$15, each widers Express 1 2 Day An 1st product \$15, each

That's (800) 722-7263. In NY State call (212) 242-3600

PC Brand, 150 5th Ave., New York, N.Y. 10011-4311 Telex: 667962 (SOFT COMM NYK)

CISHT FC BRAND



with QUICKCODE PLL

Let's face it. Coding is a waste of time. Why should you have to work hard just to

get dBASE to do what you want? You shouldn't. And now you don't

Let QUICKCODE PLUS do it for you. QUICKCODE PLUS is a complete application generator which automatically writes your dBASE programs. Design any kind of screen using the built-in Form Editor. Then, use lightning-last 1-2-3¹³ style commends to tall QUICKCODE PLUS ell about your application (files, fields, computations, manus, etc.)

After that, just sit back and watch as QUICKCODE PLUS produces some of the best dBASE programs you've ever seen. Modular, standardized, highly commented code which you can easily modify

And we're not talking about limited "skeleton" programs which you could easily write yourself. These programs are comparable to those written by a dBASE expert. Can you imagine how much assier your work would be if you had QUICKCODE PLUS? Order it now and STOP wasting time!

eatures _

rms; Maximum size = 11 pages, maximum number of fields = \$12 Data Types: Character, Money, Date, Integer, Numeric, Telephone, Soc Sec, Logical

d or Non-Protected, DBF or Memory, Deplay or Non-Deplay, Use

see: Range, List, File, and any expression allowed in dBASE utations: Anything allowed in dBASE, performed on screen as you anter or it dats, full support for Clipper functions

pilled Programs: General purpose LOOKUP and UPDATE programs included as SE source code. Use them in any application and Files: Link up to 5 databases together on one form using rela Menu Generator: dBASE programs or high-speed QUICK MENUS

ed Form Editor: Specifically designed for building database for Printer: Use BOLD, /TAL/CS, etc. **Customization: Many features**

Requires dBASE II PLUS and 384K RAM

with QUICKREPO

Not getting enough mileage out of your dBASE reports? Is REPORT FORM too weak and programming it yourself too slow? Then it's time to switch to something a lot stronger. QUICKREPORT.

> QUICKREPORT is the dBASE report writer you've always wanted. The one which lets you design reports in seconds simply by drawing them on the screen—without eny programmino. No longer are you limited to one line per record. Put text and data anywhere you

> like (including computed fields, totals, averages, etc.) No longer are you limited to one detabase per report. With QUICKREPORT, you can link together up to 6 databases and use such powerful features as file chaining end transaction processing

> You can also sort, group, and total date on up to 16 fields, with unique hea ers/footers for each page and each braak group. Use printer features like BOLD and ITALICS. QUICKREPORT gives you plenty of power. But its user interface is so friendly that

> PC Magazine called it "elegant." So while you're using ell that power, you can take it easy.

And isn't that what computers are for? NEW! Free, Unlimited Use Runtime License



What the Critics Say: "Quickreport is elegant."

"Quickreport from Fox & Geller is a top-notch report generator that's easy to learn and operate

a furiong ahead of dBASE.



NOW

100% CLIPPER

COMPATIBLE

PC Magazine

Fox & Geller

604 Market Street Elmwood Park, NJ 07407 (201) 794-8883 Telex: 311256

PC ADVISOR



Help in typing directly to a printer, in clearing off valuable desk space, in learning to program EGA cards, and in upgrading system memory.

TYPING TO A PRINTER Is there any way to type from the keyboard

Is there any way to type fron directly to the printer?

Katherine Behr Phoenix, Arizona

One of DOS's undernsed gems—the redirection feature—test you route one line at the fine the special of the printer. To say to out, enter CON > PRN at home the prompt. The curser will appear to hand, line without a prompt. You simply Determined to the prompt. The same part of the prompt. The same the prompt. The Enter. DOS immediately sends the cursor to the printer and advances the cursor to onther think line. When you've further printing lines, you press Cirl-Z and Enter. The DOS prompt their reasoners.

You can use the redirection feature in a host of useful and timesaving ways in addition to this novel use. For example, you can route a directory listing to the printer by entering DIR > PRN or to a file by entering DIR > PRN or to a file by entering DIR > PRN or to a file by entering DIR > The normal to a few minutes with your DOS manual to acquaint yourself fully with this easy-to-

use franter.
The Typewrite (Power Upt, San Mateo, Calif.; (800) 851-2917; 539-59; also the toy count extra directly to the printer.
But as its name implies, it more closely mimics a typewriter. You choose benefits a vice of the count o

UPENDING YOUR SYSTEM

I'm toying with several ideas on ways to make some room on my desk. One involves standing my computer on its side by using one of the stands like those advertised by Curtis. What effect will this have on my hard disk?

Robert Cameron Columbia, South Carolina

Several PC Magazine editors have been ucking units under their desks in this way for years, and they've never had any problems as a result—as long as their desks were sturdy. And disk drive naunfacturers will tell you there is no harm in running your system on its side, or even upside down, for hat matter.

However, there is a slight chance that gravity will cause the hard disk's accustor heads to shift a bit in relation to the tracks on the disk platters. This won't damage your disk drive, and it probably won't

■ The Typewriter lets you route text directly to the printer. But as its name implies, it more closely mimics a typewriter. cause any problems whatsoever. But it can create errors if your disk uses a band-stepper actuator, found in inexpensive and old disks

If that's the case, there is a safeguard against this problem, though it may be more trouble than it is worth—back upour data and low-level formar your disk with your system unit placed on its side. The format will cause the heads to lay new tracks, so even if the heads have shifted, the new tracks will be aligned correctly with the heads.

EGA MEMORY MAP

I have just purchased an XT compatible and plan to write a program that will use the EGA card. Where can I find a publication that will give me a very detailed memory map or describe locations of the EGA graphics?

Michael Keylin Brooklyn, New York

Enhanced Graphics Adapter, on 18M publication, fully documents the intricactes of the EGA standard. You manipulate the EGA by writing directly to its registers or, preferably, by utilizing EGA BIOS calls. This 18M manual lays out all the information you'll need to do either, provided you're conforable with programming at the nust-and-botts level.

To obtain a copy of the Enhanced Graphics Adapter manual, call (800) 426-7282 with your credit card number at hand and ask for part number 6280131. You'll be billed \$9.95, plus \$5 for shipping and handling charges.

BOOSTING MEMORY CHIP SPEED

I'm considering replacing my PC's DRAM chips. Als today show 25K-byte chips available from 100 to 200 nanoseconds. Will adding 100-nanosecond chips speed up my system, or is actual speed limited by elock speed or other components within the computer? Also, is there a way to determine the optimum chip speed to purchase?

Ray C. Schaar Kansas City, Missouri

Replacing your system's memory chips with faster chips will have no effect on the speed of your system.

To use a crude analogy, think of your ystem as an assembly line: the speed of the conveyor belt is the clock speed; the workers are the different components of your system, including your memory clips; and the product is the correct implementation of each command. The speed an

which one worker can do his or her part bears little or no relation to the speed at which the product is produced—as long as that worker performs the appropriate job fast enough. If the worker isn't fast enough, the product will be looplessly flawed. In other words, your system simply won't work.

When you install an accelerator board, you're changing your system's clock speed in one way or another, in addition to adding a faster processor. Depending on the design of the occelerator, your memory chips may be expected to operate at the new, accelerated rate. If your system pears to operate correctly, keave your RAM doute. If your system fails to operate, to mover, show memory chips may be your

problem.
There are crude ways to calculate the necessary DRAM speed rating. But to keep it simple and conservative, use the following guidelines.

Clock Speed	Wait States	DRAM Rating
6 MH:	1	200
6 MHz	0	120
8 MHz	1	150
8 MHz	0	100
10 MHz	1	120
10 MHz	0	80
12 MHz	1	100
12 MH+	0	80

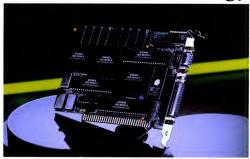
If you're in doubt as to whether or not your system inserts a wait state when accessing memory, check the technical specifications or contact the manufacturer. These guidelines are based on typical systems and may not apply to all manufacturers' models.

ASK THE ADVISOR

Send your questions to PC Advisor, PC Magazine, One Park Avenue, New York, NY 10016. Please include a description of your system.

lever enter time and date again. dClock II \$69.95 Slotless Clock-Calendar You'll get right to work without the bother of entering time and date. dClock II does it for you automatically when you turn on your personal computer. dClock II does not take up a valuable expansion slot. It plugs into the back of your floppy disk drive, and can be installed in less than 5 minutes. You'll get all this with dClock II: · Ease of installation, Comes with floppy disk with installation software, easy-to-use installation manual. Compatibility with most all personal computers. Replaceable battery with 3 year lifetime. 30-day money back guarantee, 1 year free repair/replacement warranty. Or mail this coupon to Microsync, 15018 Beltway Drive, Dallas, Texas 75244: Yes, please send my dClock II. I've enclosed \$69.95 plus \$2 for shipping and handling. Checks or credit cards. No cash please. Actual Size _____ State_____ Zip____ City___ Charge to my ☐ Visa ☐ MC ☐ American Express Card No... of Microsyne Incorporated

Everex ASIC Technology



. . Puts you in the 3rd Dimension

EGA is Extended!

Everex unveils its latest in ASIC EGA chip set to extend the resolution beyond 640x350 to 640x480 and even 752x410!! Choose any 16 colors from 64 to display the DELUXE picture with customized reliability.

132 Column Display The short card runs CGA

software on an EGA monitor in 132 columns with 256K video memory. You can also run Hercules⁷⁸ 720x348 text on the same monitor.

Printer Port Tool

Printer Port 1001
For your extra convenience, a parallel printer port is also included. Select the display mode with EGMODE software. Compare the features to others. Raise your standard to the DELUXE level today!

	EVEREX Micro Enhancer Deluxe	PARADISE Autoswitch 480	VIDEO 7 Vega Deluxe	STB Multi Res
List Price	\$399.	\$599.	\$599.	\$495.
752x410 Resolution	Yes	No	Yes	Yes
Half-card	Yes	Yes	Yes	No
Parallel Port	Yes	No	No	Yes
Hercules on EGA Monitor	Yes	No	Yes	No
132 Column Display	Yes	Yes	Yes	Yes



1-800-821-0006 (ie U.S.A.) 1-800-821-0807 (in Colifornio)

431 Milmoot Dr. Fremoot CA. 94538 (415)683-2100

EVEREX, EVER for Excellence and Micro Enhancer Deluse are trademarks of Evenex Systems, Inc., Hercures is a trademark of Hercures Computer Technology, AutoSwitch is a trademark of Pereduse Systems, Inc., VEQA Deluze is a trademark of Video Seven, Inc., EQA Multi Res is a trademark of STB Systems, Inc., 4187 Evenex Systems, Inc. All rights reserved



...ABOUT ANALYZING YOUR DATA, You might be spreading your

YOUR DATA. TOU MIGIT OUR STREAMING YOUR DATA. Spreadsheet a little too thin. Or maybe you're starting from scratch. But if you're serious about data analysis, you're ready tor SPSSPC+"—a full software family that brings you eight high-powered ways

to complete any data analysis task.

Enter it. SPSS Data Entry II" is a fully integrated data entry, cleaning and editing tool.

Analyze it. The SPSSPC+ base package provides a powerful array of satistiscal and reporting procedures. Picture it. SPSSPC+ Graph-in-the-Box" featuring New England Softwares Graph-in-the-Box" offers full color "snapshot" graphics.

Examine it. SPSS/PC+ Advanced Statistics" lets you get more serious with your data. Predict it. SPSS/PC+ Trends"—our latest option—is the complete time series analysis/forecasting tool. Table it. SPSS/PC+ Tables" produces presentationready tables instantly. Chart it. SPSS/PC+ Graphics" featuring Microsoft*

Chart creates show-stopping graphs and charts.

Map it. SPSSPC+ Mapping "featuring MAP-MASTER" creates maps where vast amounts of data can be summarized and presented in one, simple picture.

SPSSPC-F products are being juit to productive use by serious fact filteders in business, poverment and education. For occurriess purposes such as market research control. Plus each product is superbly documented and supported by SPSS Inc., a leader in statistical software for nearly 20 years while specially alloand customer support is available through the VALUE PLUS 'plan. SPSSPSP-F erotelasis, contact our Marketing. In

CALL 1/312/329-3316

phone: +31183036711 + TWX: 21019

SPSS Inc. + 444 North Michigan Avenue, Suite 3000 + Chicago, Illinois 60611 In Europe: SPSS Europe BV - PO, Box 115 - 4200 AC Geninchem, The Netherlands + Tele

SSPC+ runs on BM PCXTIATs with hard disk. Contact SPSS Inc. for compatible microcomputers, SPSSPC+, SPSS Disk Entry IL SPSSPC+ Graph in-the-Box, SPSSPC+ Advanced Statistics, SSPC+ Tends, SPSSPC+ Tends,

Department.

CIRCLE 170 ON READER SERVICE CARD

Everex ASIC Does It Again



4MB EMS/Extended Memory for PS/2 Micro Channel

The new Application Specific Integrated Circuit (ASIC) from Everex performs the memory management on the RAM 4000" The functions of many chips are combined into a single 84 pin chip. This has reduced the total number of components to increase the reliability and create more room for memory. Boost your memory with the RAM 4000 all the way to

Flexible for your

4 megabytes!

There are two banks of memory on RAM 4000. Each bank (18 chips) gives you 2MB. Load either 3)(B or 4)(B or non need

Configure to

The ASIC chip frees you from restrictions. Allocate a part of the 4MB as EMS memory and the rest as extended. Or you can also dedicate the entire 4MB as either EMS or extended.

The RAM 4000 lets you run iarger spreadsheets with Lotus® 1-2-3®, bigger databases with dBase III Plus™ or run more applications in Microsoft® Windows.

The I/O addressing and memory

RAM 4000 is accompanied by Expanded Memory Manager which manages the operation of all EMS memory, while EDISK lets you use RAM to simulate an extra fast drive. There is also a print spooier that iets you print files while you edit others.

Why wait? For the name of the Everex dealer nearest you cali:

(800) 821-0806

(800) 821-0807 In Calif.

SAVE YOUR PC FROM EARLY RETIREMENT.



FIRST LOOKS

Tandy Blitz Broadens Line With 386, Laptop, Laser

OVERVIEW

BY NORA GEORGAS Watch out for Tandy. The trend it started with the feature-rich, competitively priced 3000 and 1000 series has accelerated with the last round of introductions.

The new goodies include two low-end machines that offer superb price/performance valuc, a PC-compatible laptop with 768K bytes of RAM and a backlit screen, a 6-page-per-minute itively priced 386 computer, the Tandy 4000 (see sidebar "Tandy's Top-of-the-Line 4000: 16-MHz 386 in the Smallest Package Yet"). The new products fill in some obvious-and some not-so-obvi-

ous-gaps in the Tandy line. It didn't take any particular powers of clairvoyance to predict that one day Tandy would introduce a laser printer, a laptop machine, and a 386 computer. But the new 1000s, the HX



and TX, are a surprise-and for entirely different reasons, they may be the most interesting machines of the new

Tandy's smallest, cheapest new desktop machine is (continues on page 34)

Tundy 4000: a

IBM's PS/2 Model 80 Delivers 16-MHz 386 Speed for \$6.995

HANDS ON

BY GUS VENDITTO

As promised, IBM started shipping its fastest PS/2 computer in July. The PS/2 Model 80's specs and performance are impressive; an Intel 80386 running at 16 MHz in a 32-bit architecture, with 80-nanosecond RAM and VGA graphics.

Compared with its competitors, though, IBM has still got some promising to do. Compaq's Deskpro 386 and the PC's Limited 386 will beat the top of the PS/2 line on most applications today. That's because Compaq uses a static-column RAM cache and PC's Limited uses static RAM running with no wait states. The Model 80 runs with one wait state. Even the better-performing of IBM's two hard disk choices, the 70-



megabyte ESDI drive, is beat by Compaq and PC's Limited.

Of course, the Model 80's Micro Channel Architecture holds the promise of multiprocess operations and greatly increased communications speed when OS/2, Windows386, and other next-generation programs arrive. But here and now.

(continues on page 34) high-reso

lation text and color graphics ere mandand on IBM's ning PS/2 Model 80

HANDS-ON INDEX

IRMA2 DCA takes control away from the firmware and puts it in the

DESOVIEW 2.0

Now handles up to 50 programs, less likely to

LINKMASTER 2.0 Opens the door to an on-line

TWO ACCOUNTING

Migent's In-House Accountant and BPI Systems

8088 PCs CompuAdd's Standard Turbo-10 and the Vendex Turbo-ggg-XT4

PAMPHLET Prints your text files in

Tandy (continued from page 33)

the 1000 HX. The \$699 8088based HX is targeted for home use and is housed in the same all-in-one chassis as the 1000 SX (which, along with the EX. will continue to be produced) that integrates the CPU and keyboard in one compact plastic to 640K. The machine is equipped with one 31/2-inch floppy disk drive; you can add another microfloppy drive and hook up an external 51/4-inch floppy disk drive or the optional external 20-megabyte hard disk drive. The storage options look limited-no internal hard disk option, for example-but remember the \$699 price tag and

the home orientation of the machine. One thing

you won't have to do with the HX is boot up DOS every time The Tonto 1400LT comes wish 768K-bytes

of RAM

you turn on the computer. Tandy has put the DOS 2.11 command processor in ROM, so the machine boots without a disk. Better yet, there's also a clean and simple interface menu that lets you run Personal Desk-

Mate 2 (Tandy's collection of

applications programs), set the

system date and time, get a list-

If you need top speed, you

may want to wait until the end of

its 20-MHz Model 80. Start sav-

ing now, though: it will carry a

\$10,995 price tag.

FACT FILE

Tandy Corp. 1800 One Tandy Center Fort Worth, TX 76102 (817) 390-3700

Tandy 1000 HX List Price: \$699, includes 256K RAM, one 31/2-inch 720K-byte floppy disk drive, parallel and joystick ports, RGB and enhanced CGA video support, GW-BASIC, Personal Desk-

Mate 2, DOS 2,11. Options: Clock/cale \$39.95; additional 31/2-inch disk drive, \$149; serial port, \$59.95. In Short: DOS in ROM and a built-in user interface make the Tandy t000 HX the out-and-out winner in the ease-of-use catego-

ry. Storage and expansion are limited, but at \$699, you can't go CIRCLE 499 ON READER SERVICE CARD

Tandy 1000 TX List Prices St. 199 includes 640K RAM; one 31/2-inch floopy disk drive; parallel, serial, and joystick ports; RGB and enhanced CGA video support; GW-RASIC Personal Desk-Mate 2: MS-DOS 3.2. Options: Clock/calendar.

\$39.95; 80287 coproc \$399.95 In Short: Superb price/perfor-

mance in a fast 286 machine. CIRCUI 434 ON READER SERVICE CAR

Tandy LP 1000 List Price: \$2,199 In Short: The Tandy LP 1000 is a good, low-cost laser printer that uses the 6-page-per-minute Ricoh engine to produce sharp black text and graphics. CIRCLE 497 ON READER SERVICE CARD

Tandy 1400 LT List Price: \$1,599, includes 768K RAM; two 31/2-inch floppy disk drives; serial, parallel, RGB, composite, clock, and external disk drive ports: GW-BA-SIC: MS-DOS 3.2. Options: 1,200-bps modern,

\$199.95; spare battery pack, \$79.95; 8087 math coprocessor. \$399.95. In Short: A competent, if un spiring, portable with some nice

design features and a competitive

CIRCLE 408 ON READER SERVICE CARD

PS/2 Model 80

ontinued from page 33)

IBM's cleanup hitter doesn't match the stats of the current league leaders.

ter looks solid.

but the case isn't strong enough

(or for that matter, big enough)

to support a monitor, so you

have to either spring for a moni-

tor stand (under \$50) or set the

monitor and computer side by

Standard RAM on the 1000

HX is 256K bytes, expandable



The Model 80's hard disk controller uses one of the eight expansion slots

FACT FILE the year when IBM plans to ship

IBM PS/2 Model 80 IBM Corp. Contact your local authorized

List Price: Model 8580-041 with I Mbyte RAM and 44-Mbyte hard disk, \$6,995; model 8580-071 with 2 Mbytes RAM and 71-Mbyte hard disk, \$8,495. Requires: PS/2 adapter or ultisync monitor with adapt cables, DOS 3.3. In Short: IBM's fast-running cream of the PS/2 crop is a mod-

el of excellent engineering, but it's not the fastest 386 PC on the CLE 446 ON READER SERVICE CARD ing of the executable programs on the disk in drive A:, or start up a program from a drive. This last option is a brilliant idea-you can set up the computer to look for the .EXE file on your application disk and boot it automatically. You don't have to remember a program's filename-just hit the function key assigned to this feature and the program will boot off the floppy disk.

One of the best things about this interface is that it doesn't obscure DOS: the menu sits just over the DOS prompt, and you can toggle between the interface and DOS commands by hitting the Esc key. It's the best of both worlds-simplicity that doesn't insult your intelligence. The other new 1000 should

be the cash cow of the whole line. The 1000 TX is an 8-MHz 80286 machine that comes standard with 640K bytes of RAM and sells for \$1,199. Repeat, \$1,199. That includes parallel, serial, and joystick adapters; one 31/2-inch floppy disk drive and a second half-height 51/4inch device slot for another floppy disk, hard disk, or tape backup; and five 10-inch expansion slots. That's a lot of options for a machine in this price range. More than, say, IBM's Model 30, which is slower, has fewer slots, and costs \$500

more than the TX. The 1400 LT (the LT does stand for laptop) is the weak link in an otherwise competitive lineup. Manufactured in Korea to Tandy's specs, it's a bulky 131/2 pounds-heavier than the machines it's going up against, including the Toshiba T1100 Plus, NEC MultiSpeed, Zenith Z-181 Portable PC, and IBM PC Convertible. The backlit supertwist screen is nice, the removable rechargeable battery is very nice, and the standard 768K bytes of RAM (there's a 128K RAMdisk) is great. The \$1,599 price, however, is only

average. The laser printer, though, is very nice indeed. The Tandy LP 1000 is based on a 6-page-perminute Ricoh engine with 300dot-per-inch resolution: it has HP Laseriet Plus, IBM Proprinter, and other emulation modes. It makes sharp black images and has a well-designed

Tandy's Top-of-the-Line 4000: 16-MHz 80386 PC in the Smallest Package Yet

purring along at a full 16 MHz. the new Tandy 4000 pushes the erformance at the top of Tandy Corp.'s line all the way to to-

day's upper limit.
Although the 4000 is nominally a one-wait-state machine. you can kick in a zero-wait-state afterburner by adding a second megabyte of RAM to the single

megabyte that's standard issue. The extra megabyte's memory bank permits interleaving-reading from alternate banks-giving one bank time to catch up to the microprocessor while the other is being read. All that power fits into an

amazingly small package (6 inches high by 19 inches wide by 18 inches deep), making it the smallest 80386 machine that is currently on the market. The ken chassis leaves room for only one disk drive bay. however, that's tall enough to accommodate three 514-inch half-height devices. Standard equipment includes a 1.44megabyte, 31/2-inch floppy disk

The controller for this drive should find success in the low- I end laser printer market. Over the last year, Tandy

With its 80386 microprocessor | is part of the system board cirry, as is the CMOS clock. RAM, and setup memory. A serial and a parallel port (both of which use AT-style connectors) are included on a short expansion card, which fills one of the two 8-bit slots in the 4000. All six of its 16-bit slots are vacant in the base machine, as is the single 32-bit proprietary memory expansion slot. The 4000 key-

board follows IBM's enhanced keyboard layout with 101 keys but, made by Key Tronic, has a soft, silent touch Pay the \$2,599 price of the basic system, and you'll get the standard features only. You'll need to add a video card, a hard

disk, and a controller. The Tandy mass-storage upgrade, a 40-megabyte, 28-millisecond-average-access-time Winchester with a controller. costs \$1,700 (somewhat less when bundled with the basic

On the other hand, Tandy does include enough software to get you started-MS-DOS 3.2, GW-BASIC, and Tandy's rudimentary Personal DeskMate

five new machines. Tandy goes

program set. An extra utility called The Monitor lets you use extended memory.

On a pure performance basis, the memory-enhanced 4000 beats all but a select few among its 80386 competition, while the single-megabyte basic unit rates

midfield among 80386s Although the bargain price is ewhat deceiving, once you add in all the truly necessary options, the 4000 still rates as a good buy and one of Tandy's best efforts to date.

-Winn L. Rosch Tandy 4000 Tandy Com

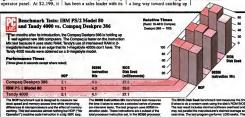
1800 One Tandy Center Fort Worth, TX 76102 (817) 390-3700 List Price: With 1 Mbyte

RAM, 1.44-Mbyte 31/2-inch disk drive, serial and parallel ports, \$2,599. Same system with 2 Mbytes interleaved RAM \$3,000

Requires: Monitor and video In Short: A good buy in a basic 386 system, but remember that with a 20-Mbyte hard disk drive

and EGA, the system will cost closer to \$4,500 CIRCLE 428 ON READER SERVICE CA

1000 SX, 1000 EX, 3000 HL, with the technology leaders. and 3000 HD PCs. With these while enhancing its position as a source of value.



RAM-Based IRMA2 Simplifies Customization of 3270 Links



BY MERV ADRIAN After nearly 5 years with the market-leading 3270 terminal

emulation board, Digital Communications Associates (DCA) has at last introduced the second generation-IRMA2. The new board is brought to life by a greatly revamped version of the IRMA terminal emulation pro-

DCA's recent acquisition of Forte Communications provided some of the key technology for IRMA2. The original IRMA board is ROM-hased, so it requires new PROMs for upgrades; Forte's hoards are software driven and excel in graphics

IRMA2 adapts to Forte's technique: it has a RAM-based layout, giving it the flexibility of being software-loaded. In DCA's eyes, this represents a platform for the future, making IRMA2 capable of being upgraded with new software as requirements evolve.

This is not entirely true: to get mainframe graphics or 3287 printer emulation, you'll need a daughterboard. Edge connectors at the top of the new board make the upgrades less intimito add PROMs. But other than graphics, the new design seems to be clearly more flexible and

responsive to user needs. The IRMA2 for the PC looks much the same as the old IR MA, aside from the edge connector at the

tures and an improved "look and feel." Menus let you configure your system, and screen writing is moderately faster. A keyboard editor lets you customize layouts and maintain distinct sets of macros for different keyboards, even if you often switch between the two. e78Plus is compatible with old

IRMA and Forte boards as well. Installing IRMA2 is as easy as ever-find an open

slot, pop in the

board, and

connect

of the first hours! from IBM for the PS/2 architectus The IRMA2 PC and PS/2 boards offer the same featu

other significant addition: a set of DIP switches at the top allows you to easily reconfigure the base memory address the

board uses. This can be very handy in avoiding conflicts with other hardware or software. The PS/2 board has no DIP switches, and its daughterboard

connectors are not compatible with those on the PC board. The new terminal emulator. e78Plus, has a list of new feayour coax line. Configuration is easy, too, thanks to the new installation utilities and the excellent installation documentation.

One caveat: the keyboard driver utility allows multiple configuration profiles to be loaded and selected, but unless the CONFIG.SYS file properly identifies the keyboard driver option, you'll get only one FACT

Digital Communications

Associates Inc 1000 Alderman Dr. Alpharetta, GA 30201 (404) 442-4000 List Price; \$1,195; e78Plus. \$395; upgrade, \$75.

Requires: 3270 coaxial link. In Short: The second generation for the IRMA board is RAM-based, making configurations more flexible CIRCLE 445 ON READER SERVICE CAR

If you have ever found yourself in the position of being the local micro-to-mainframe guru, then you will really appreciate the new IRMACHK utility. It is a tremendous improvement over IRMADUMP, which dumped register contents all over the screen, decipherable only after placing a telephone call to DCA's tech support, IR-MACHK puts a great amount of useful information on the screen and is well documented. IRMA-DUMP was not documented

DCA's position as industry leader only seems stronger thanks to the newly available MacIRMA and IRMA2. In fact. DCA is one of the first board makers to ship an add-in card for the PS/2.

NEC MultiSync Runs VGA, Thanks to a \$19.95 Adapter

You'll have to excuse your friends who own NEC Multi-Sync monitors if they're walking around wearing silly grins. When IBM unveiled PS/2s with video adapters brandishing a totally new connector pin-out, MultiSync owners were left wondering if the monitor that was supposed to be immune to

changing video standards had met its match In mid-July, NEC Home Electronics (U.S.A) ended the suspense when it unveiled the \$19.95 IBM System 2 Cable Adapter, which gives Multi-



NEC's IBM System 2 Cuble Adopter fits between a PS-2 monutor port and the NEC MultiSync cable to use the MuluSinc fell VGA compatibility.

Sync monitors access to VGA graphics. Our tests of the 9- to 15-pin converter showed com- There should be no problem



patibility in every mode, including the 256-color Mode 17. running any of the VGA boards for PCs that have been announced but are not yet available.-Gus Venditto IBM System 2 Cable Adapter. Part No. 44509

NEC Home Electromes (U.S.A.) Inc. 1255 Michael Dr. Wood Dale, IL 60191 (800) 632-7875 List Price: \$19.95 Requires: NEC MultiSync monitor; PS/2 computer or VGA graphics board.

In Short: Adapter cable that gives a MultiSync access to VGA graphics.

CIRCLE 444 ON READER SERVICE CAR

PROTEGÉ breaks the price barrier!

PROTEGÉ 286 SYSTEM

- J INTEL™ 80286 Microprocessor
- → 640K Memory
- → 8/12MHz Keyboard Switchable
- Norton™ SI: Rating 13.3 One 1.2MB Diskette Drive
- Western Digital ™ HD/FD Controller
 - → Clock/Calendar with Battery Backup → Eight Expansion Slots
- 190WT Power Supply
- → Hardware Reset Switch
- → Enhanced Keyboard (101 Keys) → Complete Documentation
- → One Year Limited Warranty

MONO SYSTEMS

- 12" Hi-Res Monitor and
- Monographic Card \$1199
- w/ 20MB \$1499
- w/ 40MB \$1699 w/ 60MB \$2099

EGA SYSTEMS

14" Hi-Res Monitor and EGA Graphic Card \$1599

- w/ 20MB \$1899 w/ 40MB \$2099
- w/ 60MB \$2499

OPTIONS

Floppy Drives 360KB \$ 99 1.2MB \$109

80287 - 8 \$269 80387 - 10 \$339

AT 14 I/O with senal parallel/game ports \$69 Second serial port \$29

1200 Baud \$99 2400 Baud \$199 60MB Streeming Tape Onve (Internal or External) \$699

PROTEGÉ COMPUTER PRODUCTS OFFERS BY FAR THE BEST PRICE/PERFORMANCE VALUE AVAILABLE. THE PROTEGÉ 286 IS MADE AND SERVICED IN THE USA. AS PROOF OF OUR COMMITMENT TO QUALITY AND PERFORMANCE, WE ARE OFFERING: · FREE UPS GROUND SHIPPING

· NAME BRAND PARTS WITHIN CONTINTENTAL U.S. · 72 HOUR BURN-IN

· CUSTOM CONFIGURATION · FREE CREDIT CARD USAGE · FREE SALES ORDER LINES · ONE YEAR WARRANTY · FREE TECHNICAL SUPPORT LINES

TERMS: MasterCard, VISA, Money Orders, Certified Checks, Person Checks(Allow 10 days for processing), C.O.D.'s and Approved Company/ University/ Government Purchase Orders, All prices are subject to change and quantities may be limited.

To order call toll free

-800-634-8388



PROTEGE INTEL , NORTON , Western Digital and AT are reg

New DESQview Can Juggle up To 50 Programs, 250 Windows

HANDS ON
BY M. DAVID STONE

If all the talk about OS/2 has made you hungry for multitast mig but you've rejected DESQ-view because it wouldn't work well with your favorite program, it's time to take another look. DESQview, Version 2.0, from Quarterdeck Office Systems, is filled with small but significant improvements.

For example, you can now open up roughly 50 programs at once rather than 9. And if the programs use multiple windows, you can open up to 250

One of DESQview's moreimpressive feats is its ability to handle text and graphics simultaneously. A 1-2-3 graph, for example, will normally take over the full screen, even if you're running 1-2-3 in a partial window. However, by giving up color, you can resize the window and look at the graphic while working in another window. You can also scale the graphic down so that it will fit entirely in the partial window. This will work only in CGA mode, although you can still use the trick on an EGA monitor by installing 1-2-3 with a CGA

in DESQview, Version 2.0, is the the new program information files, which help give it greater stability. Earlier versions of DESQview 11al the settings on as a single screen. These versions also had a tendency to crash unpredictably. DESQview 2.0 isset two screens' worth of in-



Shown are four open windows, and DESQview can keep each working: the double lines around the spreadtheet below indicate that this is the active window.

LinkMaster 2.0: An On-line Lending Library

HANDS ON

BY EDWARD MENDELSON

LinkMaster, from Master Control Systems, provides access to a rental bulletin board for software. It operates on the principle "Give away the razors, make money on the blades."

The LinkMaster communications program, which connects you to the network, is free, at least forth foresceable future. But you pay connect charges when you download an application and rental fees when you use it. The programs arrive at your computer locked in security code. In order to unlock them, you have to go on-line to the network and ask it to send the open-se-same command the back to your computer. The system sounds ideal for when you need a program in a distant hotel room or it is too lase to run down to the software supermarket. Unfortunately, the major programs a available (WordPerfect, &BASEIII, and a few others) take 2 hours or more to download, lack some auxiliary files, and can be used only for 2-hour periods before they shut

tylines, and can be used only for 2-hour periods before they shut down. You have to work without a manual or template, unless you order copies by mail. At least you can download games when you get frustrated by the applications. You can as to send electronic mail to other people in your company or get access to nationwide --mail services. It's an interesting idea, but Master Control will have to add Master Control will have to add.

FACT

LinkMaster, Version 2.0 Master Control Systems Inc. 2133 Smith Ave. Chesapeake, VA 23320 (800) 525-5108

> List Price: Free for a limited time (officially \$179.95); bulletin board daytime connect charges \$24/hour, night charges \$12/hour; program rentals set by publishers (normally 1510.50 creats per use).

> Requires: Modem, DOS 2.0 or later. In Short: Access to an on-line network that rents applications programs and games and offers

e-mail services.

far more applications before it becomes worth the trouble.



DESQview, Version 2.0 Quarterdeck Office Systems 150 Pica Blvd.

Santa Monica, CA 90405 (213) 392-980] List Price: \$129.95; upgrade, \$50: Expanded Memory Man-

ager, \$59.95.
Requires: 640K RAM, two
disk drives, DOS 2.0 or later.
In Short: DESQview, Version
2.0, provides essentially the
same features as prior versions,

but it works with more programs and is far less likely to crash. Not copy protected.

formation, letting you customize windows more precisely for each program.

Other improvements in DESQview 2.0 are more subtle. Many solve problems with specific programs. When using SuperCalc on an EGA, for example, putting the program in a partial window changes Super-Calc's vellow borders to red and sets the column letters and row numbers blinking. With earlier versions of DESOview, the only way to recover was to close the window and reopen it. With Version 2.0, the borders go back to their normal color automatically when you zoom the SuperCalc window to full size.

DESQview provides special "loader flies" toun such popular, mishehaved programs as WordStarr, Microsoft Word, and 1-2-3, but less-popular progams are ignored. If you have a 360 machine, Version 2.0, in combination with Quarterdeck's Expanded Memory Manager, runs programs in virual 8086 mode. This eliminates the need for loader files for many programs.

DÉSQview may never work with every program available, usery program available, but DESQview 2.0 delivers more of what DESQview has always promised. It works more smoothly with more programs, and it works well. If multitasking sounds appealing, try it. You might like it.

QuadStar. Serious Networking Made Simple.



Despite all the claims, networking has stayed just out of reach for many people. Instead of simple and quick, you usually find complicated, confusing, and costly systems.

QuadStar is different. It puts networking where you can get a grip on it.

Easy to install and start

First, get your hands on the QuadStarter Kit. It includes everything you'll need: adapter boards, software, manuals, and cables. Plus simple, 10-step instructions in a conven-

ient fold-out guide, a helpful audio tape, and other plain-English materials. In no time at all, you'll have the equipment in and the network up and running.

> Simple to operate Instead of confusing

computer code, QuadStar and Tapestry operating system use simple icons, easy-to-understand symbols, like an "out box" to send electronic mail.

A real performer

At the same time, feel the full network power in your hands. QuadStar and Tapestry deliver all the performance you'll need to do serious networking one work group now, more as your needs grow.

A price you can handle

It's even easy on your wallet. Stationfor-station, QuadStar costs about half what you'd expect to go you's afford hele

For simple, serious, affordable networking, choose QuadStar.
See your dealer or contact Quadram at One Quad

Way, Norcross, GA 30093. Telephone 404/564-5566.

QuadStar



ANNOUNCING ORACLE'S NEW DIS

THE FIRST PRODUCT TO BREAK

WHY WAIT FOR OS/2? RUN LARGE APPLICATI

A IP C DBMS have three serious limitations. First, very little room is left for your application after deducting the size of DOS and he DBMS from the available 640K. Second, they don't provide easy, transparent access to minkromputer and mainframe data. Finally, multi-user applications are impractical because of long delays caused by LN data lock-out. Three serious limitations. Not any more.

In 1979, Oracle Corporation delivered the very first relational DBMs Oracle also delivered the very first implementation of SQL. And now, we're delivering the first ever distributed DBMs for PCs. Prodesional ORACLE.* Networkstation ORACLE and LANserver ORACLE.* Three DBMS products that bring mainframe applications, mainframe data, and mainframe power to the desktop. All of which incorporate ORACLEs breakthough technology. And all deliverable today.

EXPLOITS 286/386 PROTECTED MODE, NOW.

■ PROTECTED MODE. NOW.

Professional ORACLE is the very first
DBMS to exploit the advanced technology of PCs like the Compaga 368, IBM's
PC/AT, and the new Personal System/2.
The ORACLE kernel—the relational
DBMS engine—executes in protected
mode. Above the 640K line in extended
memory. At the same time, your ORACLE,
applications, tools, and DOS 3.x execute



means your PC/AT can run the same leature-rich ORACLE that mainframes run. Not a down-sized subset. Plus it leaves you plenty of memory to develop and execute major database applications. Without giving up your memory-resident utilities.

SEAMLESS CONNECTIVITY, NOW.

When other PC DBMSes claim "connectivity," they mean terminal emulation or file transfer, downloading and uploading static data snapshots.

With Networkstation ORACLE, an ordinary PC (XT as well as 286 or 386) becomes a true distributed application processor. You can dynamically access and update a remote database—either ORACLE or IBM's DB21—as if it were stored on your PC.

What's more, ORACLE's SQL#Star distributed database architecture—the first ever on PCs—lets you query or update local PC and remote databases simultaneously. Even join them into a single view. Without knowing where stribute your data to where it's used the most. Control, secure, and back it up however you want. And still network it all together whenever you need to.

ORACLE Connectivity - PC to Database Server								
Speed Class	Media	Row Speed						
Low	Async Lines	<19,200 bps						
Medium	3270 Coax	50 Kbps						
High	Ethernet	10 Mbps						

Networkstation ORACLE works over Ethernet using DECnet protocols. Over 3270 coax using LU2 data streams. And over RS-232 and dial-up phone lines. With TCP/IP, APPC LU6.2 and other industry-standard protocols to come.

ORACLE H

Fully Utilizes 286/386 Technology Seamless Connectivity To Munis & Mainframe

Database Server For PC LANs True SOL-based

Portability across VM, MVS, VAX/VMS, UNIX & others

Develop Mainframe & Mini Applications On Desktop True Multi-User Concurrency

Mainframe Data Integrity Distributed Processing

Distributed Database
Familiar 1-2-3-like Spreadsheet Interface

DATABASE SERVERS FOR LANS. NOW.

Using an Ethernet LAN, you can connect Networkstation ORACLE PCs to a variety of powerful ORACLE database servers. Such as the MicroVAX 2000. Soon, you'll be able to connect them to PC ATs, Personal System/2s or the new Compaq 386 running LANserver ORACLE 1

Other PC DBMSes execute entirely in your workstation PC, using a network file server to perform file

and byte-range locking. Their results? Excessive network traffic,



frequent waits for busy records, and corrupted databases from aborted transaction streams. ORACLE's database-server architec-

ture ensures minimum network traffic, maximum concurrency, and data integrity for the most demanding multi-user applications. Just like a mainframe. And at one-fifth the cost of the least expensive proprietary database machine.

TRIBUTED DBMS FOR 286/386 PCs

THE 640K BARRIER ON THE PC

ONS ON YOUR DESKTOP UNDER DOS 3.x NOW

AS IT NOW. dBASE III R:BASE ORACLE System V NOW NO NO NOW NO NO

NOW NO NO NOW NO NO NOW NO NO NOW NO NO

SQL COMPATIBILITY.

ORACLE is compatible with both the ANSI-standard and IBM-standard SOL database language.

Which means you can develop appli-cations in ORACLE on your PC and run them on the largest mainframe under ORACLE or IBM's DB2.



NRIVALED ORACLE PORTABILITY, NOW.

Moreover, your ORACLE PC applications also become automatically portable to over 30 minicomputer and m families. Under VM, MVS, VAX/VMS, UNIX, and other operating systems.

PRODUCTIVITY FOR NOVICES AND EXPERTS ALIKE. NOW.

Both Professional ORACLE and Networkstation ORACLE come with a con prehensive array of fourth-generation tools for reporting, decision support and application development. Tools that are the envy of our mainframe and PC competition alike.
Tools like SQL*Plus. For performing complex queries, updates, and database administration with ease.

ORACLE'S SQL+Stor di

SQL*Report. The comprehensive multi-table report generator. SQL*Forms. The versatile forms-based application builder. So you can develop applications in record time and train users in no time.



SQL*Calc. The 1-2-3-like spreadsheet that marries the world's most popular PC user interface with the world's most powerful PC DBMS. Optional precompilers also let you ccess ORACLE from embedded SQL

in COBOL or C-language programs. FOR A LIMITED TIME, BE THE FIRST.

Be the first in your organization to experience how fast you can build complex SQL applications on your PC.
If you're a VAR, be the first to expand your markets and make your mainframe applications available on desktop tech-nology. Compare ORACLE's power, features and ease. The more you test,

the better we'll look. And the faster you act, the better you'll look, too.
Order ORACLE now. While you can still be the first. So you don't finish last.

SEND ME THE FOLLOWING PRODUCTS, NOW. Attention PC Marketing • Oracle Corporation One Oracle Parkway • Belmont, CA 94002 Select Media. | 5%° or | 3% Professional OBACLE, \$1,295 Ba

. State Zip

Order Date Or Call 1-800-345-DBMS

rck.
a purchase order or credit card derCard or Appendix Express.

Oracle Parkway • Belmont, CA 94002 World Headquarters: (415)598-8000 sry (403)265-2622 • Ottawa (613)238-2381 sec (514)337-0755 • Toronto (416)596-7750 otucile un correct (416)596-7750 (4)6)596-7750

Now you can calculate on your PC with the same freedom you have on paper.

MathCAD." The first software that lets you do calculations on your PC as simply as on a scratchpad. Just define your variables and enter your formulas anywhere on the screen. MathCAD not only formats your equations as they're typed, it instantly calculates the results, and displays your work in real math notation.

But MathCAD is more than an equation solver. In addition to the usual trigo-nometric and exponential functions, it includes built-in statistical functions, cubic splines, Fourier transforms, Bessel functions, and more. It also handles complex numbers and unit conversions in a completely transparent way.



And here's the best news. Even with all this power, MathCAD is so easy to learn, you'll be using it in an hour. With

MathCAD you can concentrate immediately on your problem, not your

What kind of calculations can you do with MathCAD? Anything you have a formula for — from working out your mortgage payments to solving a heat transfer problem, or modeling electrical circuit

parameters.
You can display your results as numbers, tables, or graphs, and combine them just like you do on paper. Add text

LIMITED TIME OFFER
y MathCAO 1.1 before August 31, 1987 at just \$249
d receive a FREE upgrade to MathCAO 2.0, to be
eased in September at \$349 list. You save \$100 if

essed in September at \$348 list. You save \$100 if u buy now. oming Soon. MathCAD 2.0 Featuring: Matrices More Printer/Pictor Suco

CIRCLE 154 DN READER SERVICE CARD

anywhere to support your work. And try an unlimited number of "what-is." MathCAD lets you see and record every step. Then print your entire calculation in standard math notation as

an integrated document that

anyone can understand.

Why spend another minute doing calculations by hand or writing and debugging programs? Put MathCAD to work for you now. Call today for further information and

1-800-MathCAD

Math CAD

MathSoft, Inc., 1 Kendall Sq., Cambri Squire, BM PC⁸ or compatible S258 EAN graphes can

Small-Business Accounting: Choices for CPAs and Civilians That Cost Under \$100

HANDS ON

BY MIKE FALKNER You've stretched your budget and popped for a stripped-down PC for your small business. You can't afford a CPA, so you need inexpensive software to help you keep your books. In-House Accountant and Entry One take a different approach to doing the

Migent's In-House Accountant keeps bookkeeping simple with easy-to-use menus and screens. You enter vendor and customer names in the Names menu and your chart of accounts in the Accounts menu. The Transaction menu brings them together, sorting by name or account number. These are then used to generate accounts receivable, accounts payable, inventory, and ledger balances.

The user interface is the best part of the package. If you can't remember an account, type the first letter or two and a possible match will show up. If you still

agings, and inventory lists to the printer or screen. There is context-sensitive help available, and the program does a very good job of prompting and error

Since accounts and names are memory resident, you are limited to 2,000 names and accounts in 512K bytes of RAM and 4,000 in 640K. Of course, businesses with that many accounts will need a more sonhisticated package.

Entry One by BPI Systems is strikingly similar to BPI's original General Ledger System sold 4 or 5 years ago. Now, as it was then, it requires some knowledge of accounting to use the

program properly. Instead of the simple choices used by In-House Accountant. Entry One has three menus with many choices for edits, reports. and maintenance. To start your books, you assign numbers to ledger accounts, vendors, customers, and employees and enter them into the appropriate

screen. With the number, you

In-House Accountant lets you print reports for oil detail items or for groups of transactions. You can sort by name or account number

aren't sure, type Alt-A and a list of all accounts will be displayed. Just move your cursor to the right one and hit Return,

and the account is selected. The package offers many features of larger systems. You can print journals, financial statements, checks, invoices,

have one line of text to describe the item, such as the name or account description. All seven transaction-entry

programs are similar, usually asking for a document number (invoice, check number, and so on), the date, and a master code for the customer, vendor, or



Entry One uses a general-ledger approach to all transactions; only the customer line differentiates it from o journal entry.

employee. Although you previously entered the master items in a specific screen, you still must provide Entry One with a prefix (such as C for customer) when you enter the master item For example, you use C100 to enter customer 100. To complete the transaction, you enter the debit account, the amount, and the offsetting entries until the transaction equals zero.

You can print a journal for each of the seven entry screens. which are very similar. You can also print payables checks and sort your master listings by number or alphabetically. Once you've completed your batches, you post them to the ledger and print a trial balance, predefined financial statements, and master

After seeing In-House Accountant, Entry One is somewhat disappointing. It does an adequate job, but it complicates the rather simple task of bookkeeping. You must go to the third menu to add master items and create a company, yet it's the first thing you must do to use the system. When you enter a menu choice, it is put in a queue until you select menu choice 1 to run the queue. It's a great idea if you are doing a month-end, but it's tedious from day to day.

Entry One isn't a bad choice if you like the traditional approach to PC accounting. It

works and you'll get valuable information from it. But In-House Accountant talks to the soul of the nonaccountant.



In-House Accountant Migent Inc. 865 Tahoe Blvd. Incline Village, NV 89450 (702) 832-3700 List Price: \$99

Requires: 384K RAM, two disk drives, DOS 2.0 or later. RAM-resident data may require ore memory.

In Short: A powerful yet iner pensive bookkeeping system for the nonaccountant. Not copy protected.

CIRCLE 421 ON READER SERVICE CARD Entry One **BPI Systems Inc.** 3001 Bee Cave Rd. Austin, TX 78746 (800) 531-5236 List Price: \$89 Requires: 256K RAM, two disk drives, DOS 2.0 or later.

In Short: The old BPI accounting system repackaged with a lower price and a few extra features. Not copy protected. CIRCLE 422 ON READER SERVICE CAR

New Toshiba Chassis For T1100 Plus, T3100 Has Slots for PC Cards

A whole cottage industry has formed to expand the capacity of laptops, with Axonix and Megahertz, both of Salt Lake City, leading the way. Now one of the major laptop makers, Toshiba America, is offering its own solution. Toshiba's \$999 expansion kit includes a chassis with five fully IBM-compatible slots and an interface cable. Interface cards for the T1100 Plus or the T3100 are each priced at \$199

List Price: Toshiba Expansion Chassis, with cable, \$999. Interface cards, \$199 each, Requires: Toshiba T1100 Plus or T3100 laptop computer and appropriate interface card. Toshiba America Inc. Information Systems Division, 9740 Irvine Blvd., Irvine, CA 92718; (714) 380-

3000 CIRCLE 442 ON READER SERVICE CARD

51/4-Inch Floppy Drive Reads. Writes to New

5.5-Meg Floppy Disks Even as all the culogies for the 51/4-inch floopy disk drive are being heard. Pacific Micro Systems has now introduced a new subsystem that can store up to 5.5 megabytes per 51/4-inch disk with access times of 85 mil-

liseconds. The Pelican 6.6 system (\$695 for an internal system. AST's Add-in Board Connects PCs to DEC Through Use of VT-220 Emulation



DEC and PC restense with the AST-220, which two DEC sessions and a DOS se

A controller board from AST Research connects IBM PCs and compatibles to Digital Equipment Corp.'s VAX or MicroVAX systems. The AST-220 occupies a single PC expan on slot and lets the PC operat in the DEC environment as a

dowing VT-220 term The \$525 AST-220 board consists of a PC add-in board, an RS-232 port mounting bracket for two VT-220 ports, and software. The ports may be connected to two different ports on a DEC host or to two sepa

per inch. Access times ap-

Windows allow con-

DEC mainframe systems

The AST-220 system soft

ware is downloaded to the AST-

220 card, which is driven by an

neously.

current operation of two DEC sessions, a DOS session, and two notepads. Data can be cut and pasted from one window to List Price: AST-220, \$525.

Requires: Monochrome monitor, nochrome video card, DOS 2.1 or later. AST Research Inc., 2121 Alton Ave., Irvine, CA 92714:

(714) 863-1333 CIRCLE 438 ON READER SERVICE CARD

proaching those of hard disks tracks per inch: standard 360Kbyte floppy disks store 48 tracks are achieved with a disk cache

on the Pelican 6.6 controller card. Pacific Micro Systems says the drive can back up a 20megabyte hard disk onto four floppy disks in less than 15 min-

Floppy disks for the system are manufactured by Verbatim. and they cost \$100 per box of five floppy disks. The Pelican 6.6 also reads conventional 360K and 1.2-megabyte 51/4inch floppy disks. List Price: Pelican 6.6, with cache/controller card and utility and backup software, \$695 for the internal version; \$895 for the

external subsystem. Pacific Micro Systems, 160 Gate 5 Rd., Sausalito, CA 92714: (415) 331-2525. CIRCLE 439 ON READER SERVICE CARD

\$895 for an external system) is 1 based on Kodak's new 6.6megabyte high-density floppy disk drive. The drive stores 384



The Pelican 6.6 (\$695 for the internal version) brings mass storage and fast access times to the 5%-inch disk. The system reads and writes special high-density floppy disks from Verbatim.

Replacement Drives For Models 50, 60 Add Capacity, Boost Speed

Early criticism of IBM's PS/2 Model 50 has focused on the plodding hard disk drive that IBM included in the otherwise hot system. CMS Enhancements has introduced a faster disk drive for the Model 50, as well as large-capacity hard disk drives for the PS/2 Model 60. The \$1,295 H40-I is a 40-megabyte internal hard disk drive that installs in the slot occupied by the existing 20-megabyte disk drive in the Model 50. CMS says the H40-I has an average access time of 40 milliseconds. or about half the access time of IBM's original equipment

Two other CMS replacement drives significantly increase the storage capacity of



Reviocement hard disk drives from CMS Enhancements provide larger mass sto age for the PS/2 Model 60. The F60M60 stores 60 megabries, while the F120M60 holds 120 menabutes of data

(\$1,795) stores 60 megabytes of data and has an average access time of 28 milliseconds. The F120M60 holds 120 megabytes-quadruple the capacity of IBM's original equipment disk-and is rated at the average access time of 28 milliseconds. List Price: H40-1, \$1,295; F60M60, \$1,795; F120M60,

\$3,295. Requires: H40-I: IBM PS/2 Model 50, F60M60 and F120M60: IBM PS/2 Model 60. CMS Enhancements Inc., 1372 Valencia Ave., Tustin, CA 92680; (714) 259-9555.

CIRCLE 440 ON READER SERVICE CARD



desktop publishing appahilities, with full-page graphics.

Imagen Corp.'s PC Publisher Kit upgrades Canon CX-based laser printers to full

Desktop Publishing Kit Adds DDL to Laseriets

Page description languages. such as DDL (Document Description Language), unleash the full power of laser printers. The PC Publisher Kit, from Imagen Corp., upgrades the Hewlett-Packard Laseriet and other Canon CX-based lasers to full desktop publishing capabilities. DDL is at the heart of the \$1 805 PC Publisher Kit

The kit is composed of a raster image processor on a PC board, cables and a panel replacement for the printer, and software, including the DDL system, eight printer emulations, and 18 fonts.

The board allows construction and output of full pages of graphics and/or mixed text/graphics images. The kit allows full font scaling and rotation of any font used. List Price: PC Publisher Kit.

\$1,895, Requires; Canon CX-based laser printer, hard disk with 1.5 Mbytes of available space. Imagen Corp., 2650 San Tomas

Expwy., P.O. Box 58101, Santa Clara, CA 95052-8101: (408) 986-9400

CIRCLE 441 ON REAGER SERVICE CARD

Logitech Enters PS/2 World with a Plug-in

Mouse for New IBMs Logitech has introduced the Series/2 Mouse for use with IBM's PS/2 microcomputers. The mouse plugs directly into the PS/2 mouse port and has a suggested list price of \$99. While other mouse manufacturers have simply added adapters to existing bus mice, Logitech designed an entirely new mouse for the PS/2. The mouse is sold with Logitech's complete Plus

software package. List Price; Series/2 Mouse, \$99. Requires: PS/2 series microcomputer, Logitech Inc., 805 Veterans Blvd., Redwood City, CA

94063; (415) 365-5051. CIRCLE 443 ON READER SERVICE CARD

HOT PROSPECT

Asher Technology's PC-to-Fax Board Sets a Low Price for PC Fax Capability

There are plenty of add-in cards that give your PC facsimile capability, but how many of them cost \$395? The JT Fax from Asher Technologies provides Group III fax functionality-in the background-for less than half the cost of competitive models. Like other such products, the JT Fax accepts ASCII or scanner input and can transmit documents from either the screen or a stored file.

Asher has also introduced what may be the first PC fax unit designed for use with portable PCs. The \$495 JT Fax portable measures 316 inches by 6 inches by 1 inch (HWD). An external unit, the portable fax attaches to

a serial port. It features an onboard speaker. LED status lights, and a carrying case. The JT Fax portable has two phone connectors, allowing telephone

use when the fax is inactive. Software included with both the JT Fax and the JT Fax portable allows unattended transmission of documents.

List Price: IT Fax \$395: IT Fax portable, \$495. Requires: JT Fax: expansion slot. JT Fax portable: RS-232 port, cable. Asher Technologies Inc., 1009-1 Mans Rd., Roswell, GA 30076; (800)

334-9339 CIRCLE 437 ON READER SERVICE CARD

The JT Fax from Asher Technologies is by



for the least expensive PC-to-fax board to offer background operation. The IT Fax portable brings fax capability to portable and laptop sys-

The 8088 PC Lives: CompuAdd. Vendex Offer the Basic System

PC HANDS ON

BY JONATHAN MATZKIN With 386 machines and PS/2s hogging the spotlight, it's tempting to dismiss the good old 8088 as a dead issue. But the clones of IBM's original XT still have a bright future, courtesy of low prices and a huge body

of available software. New machines from CompuAdd Corp. and Vendex Pacific provide value and performance for less than \$1,000. CompuAdd's Standard Turbo-10 (\$495 for a base system) offers speed and a range of configuration options for business applications. The \$995 Vendex Turbo-888-XT is a complete package for the neophyte user.

CompuAdd's basic Turbo-IO is built around an eight-slot system board. Clock speeds of 4,77 and 10 MHz are keyboard selectable. Your \$495 also gets you a single 360K-byte floppy disk drive, 640K of RAM, a 150-watt power supply, and a keyboard with the original AT lavout.

Beyond that, you choose the options to complete the system.

standard-brand EGA card (\$169); a 30-megabyte, 68-millisecond Seagate hard disk (\$429); a second Panasonic floppy disk drive (\$99); and an 8087 math coprocessor (\$219), bringing the total price to

\$1.411. This configuration is a result of several compromises. No I/O ports are included, and the floppy and hard disk controllers are

on separate bus cards. On the plus side, the solidly built system unit comes with a front-mounted keylock. The front panel also sports a reset switch, which is nice. But the switch has a soft enough touch that I accidentally reset the sys-

tem a few times The Turbo-10 comes with the usual mushy clone keyboard, in this case a Maxi-

Performance is definitely what you would expect from a 10-MHz machine-the Turbo-10 ran more than twice as fast as the original IBM PC-XT in our

benchmark tests. The Vendex Turbo-888-XT may be the most complete, selfcontained hardware and software package ever for the home

For \$995, you get a dualfloppy-disk system unit with seven slots, 512K bytes of RAM, an old AT-style keyboard, and a Hercules-compati ble monochrome graphics adapter and monitor. Also included are one serial and one parallel port, a game port, a bus

mouse port, and a keyboard In addition to the hardware, Vendex provides a wealth of applications software, including a word processor (Executive Writer) and a flat-file database (Executive Filer) from Paperback Software. The Software Toolworks' MyCalc spreadsheet is also bundled with the

The 8088-2 processor is switchable between a 4.77- and an 8-MHz clock speed. In turbo mode, the Turbo-888-XT ran about one and a half times faster

than the IBM PC-XT. CompuAdd's Standard Turbo-10 is a solid system for users sophisticated enough to know their needs and to choose the appropriate configuration. The Vendex Turbo-888-XT is for a different audience. It would make an excellent system for anyone venturing for the first



CompuAdd Corp. 12303-G Technology Blvd Austin, TX 78727

(800) 643-0992 List Price: With 640K RAM. one 360K-byte floopy disk drive, 150-watt power supply, \$495; 30-Mbyte Seagate hard disk drive, \$429; standard EGA adapter, \$169; Samsung EGA monitor, \$439; Samsung monochrome monitor, \$109; 8087 math coprocessor, \$219. In Short: A two-speed syste

that comes in a wide range of

CIRCLE 417 ON READER SERVICE CARE

configurations.

Vendex Turbo-888-XT Vendex Pacific Inc 40 Cutter Mill Rd., #438 Great Neck, NY 11021 List Price: With monoche monitor, \$995; with color monitor, \$1,295; 20-Mbyte hard disk on a card, \$549. In Short: A complete two speed system with an assortment of entry-level software

CIRCLE 438 ON READER SERVICE CARD

The configuration I tested had a time into the PC world. Benchmark Tests: Vendex Turbo-888-XT and MPC-XT = 1001 CompuAdd Standard Turbo-10 vs. IBM PC-XT e Vendex Turbo-868-XT and CompuAdd Corp's Standard Turb fer two speeds. We ran our benchmark test at the far es: 8 MHz for the Vendex and 10 MHz for the Comp. r speed, both run even with the IBM PC-XT, a one-speed computer. rmance Times

	HOP	instruction Mix	Access (millseconds)
IBM PC-XT	10.14	32.02	234.70
Vendex Turbo-888-XT	6.05	19.39	211.17
Standard Turbo-10	4.78	15.43	211.33

THE RIGHT ANSWER BACKUP QUESTION



NOW IT'S EASY, FAST, AND AUTOMATIC

The software in Genoa's Galaxy™ tape system makes backup easy and fast. Just choose your options from the menu, press a few keys, and four minutes later your 20 MB hard disk is all backed up.

SMART, AUTOMATIC

You can set your Genoa Galaxy to backup automatically on a regular basis—like once a day. (That's smart!) If you're working on your computer when it's time to backup, the Galaxy will remind you it's time to take a five-minute break. Or, you can tell Galaxy to backup automatically after

And, while the Galaxy backs up your data, it will display an on-screen status report.

NETWORK UPGRADEABLE

Add Genoa's GenWare ™ software to your Galaxy tape backup system. and you can backup the data in your Novell network quickly and automatically. You can also easily exchange data between your stand-alone Galaxy units and your network units. Genoa has the answer to the backup

question: a whole family of tape backup units, from 20 to 120 MB, that are easy, automatic, and fast, For the dealer nearest you or for

more information, call 408-432-9090. Or write Genoa Systems Corporation, 73 E. Trimble Road, San Jose, CA 95131. FAX:408-434-0997. TELEX: 172319



5 MB a minute! Genoa's menudriven software makes it easv!



Windows Graph: Presentation Graphics That Rank with the Best

HANDS ON BY BILL HOWARD

can have multiple graphs on a If you've seen the Macintosh page, and you can overlay graphs on top of each other. TV ads in which the silverhaired executive marvels at the It's the ability to manipulate quality of his underlings' rethe graph with a mouse that sets ports and presentations-he Windows Graph apart from the

except indirectly. You can basic math and sorting funcstretch a graph left-right, uptions. You can read in 1-2-3, down, or proportionally. You Multiplan, and VisiCalc worksheets directly.

If you have to produce the same graph over and over, you can save the graph style, import the updated figures next month, and then all you have to do is pull down the File menu and click the Print button. Just think of it as the equivalent of a Mi-

crosoft Word style sheet for graphics. The best and worst features

of Windows Graph are those of Windows: because it runs under Windows, it's a pig on anything less than an 8-MHz AT. And, after an initial burst of rapid learning, you'll need more than a few hours to learn where Microerafx tucked all the features. In true Windows tradition. choices are dispersed in schizophrenic fashion among the dozens of commands. For instance: In the Options menu, is it the Attributes, Axis, or Legend command that lets you box in the whole chart? (Answer: the Grid command. Gotcha.) Also, in Version 1.0, you can't format numbers that appear on

the axes or in labels, so

4,165,292 and 127 percent

show up in your chart as

FACT

Windows Graph, Version 1.0 Micrografy Inc 1820 N. Gmenville Ave. Richardson, TX 75081 (800) 272-3729

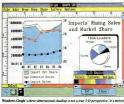
List Price: \$395

Requires: 512K RAM (640K RAM recommended). AT-class PC recommended, two disk drives, Microsoft Windows, graphics adapter, mouse, DOS

2.0 or later In Short: A superior, Windows-based presentation graphics program on par with the PC's best. Really needs an AT or 386. Not copy protected. CIRCLE 484 ON READER SERVICE CARE

In addition, you can only read in values (not formulas) from 1-2-3. Micrografx promises to have these flaws fixed in time for Version 1.1.

But those setbacks are minor. Dollar for dollar, and chart for chart, Windows Graph offers as much flexibility and more-impressive results than just about any of its competitors in presentation graphics-who aren't standing still, either. The latest Harvard Graphics (Software Publishing excised Presentation from the name) especially bears watching. The heightened competition makes



a dramatic effect. And its spreadsheet won't make you throw away your 1-2-3 disks, but it's extremely handy, since data and chart can be seen and worked upon side by side The spreadsheet window can be moved, shrunk, or expanded.

can't believe it was done inhouse-this is what Windows Graph brings to the PC.

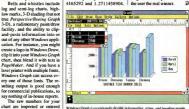
Just beware, you can become so engrossed in ultra-finetuning your charts, you might lose track of time and lose sight of Rule 1 for good graphs: sim-pler is better. This \$395 wonder from Micrografx, the company behind In*a*Vision and Windows Draw, produces graphs of exceptional quality and detail. It ranks with the PC's best: Harvard Graphics, Freelance, and The Gallery Collection. (See "Graphics Software on Display," PC Magazine, Volume 6 Number 5, for reviews of 44 top graphics programs.)

No Word Charts Windows Graph's repertoire

includes area, column and bar, line, pie, scatter, and table (data) graphs, but no word charts or organization charts, pack. A mouse may or may not make word processing easier, but on graphics, the verdict's in: Mouse I. Keyboard 0.

Bells and whistles include log and semi-log charts, highlow marks, 3-D shading (but not true Perspective/Boeing Graph 3-D), a rudimentary paint/draw facility, and the ability to clipand-paste information into or out of any other Windows application. For instance, you might create a logo in Windows Draw, clip it into your Windows Graph chart, then blend it with text in PageMaker. And if you have a laser printer with multiple fonts. Windows Graph can access every one of those fonts. The resulting output is good enough for commercial publications, to

The raw numbers for your chart are imported or entered into Windows Graph's worksheet, where you can perform



The program makes good use of the mouse interface for easy stretching of the graphs in one or both dimensions.

Breaking up is hard to do.



making it easier.

It's tough to say goodbye. But you know it's time. Your old word processor was a star in its day, but that was yesterday. Today's word processor is waiting to introduce you to on-screen columns, auto reformat, line drawing, better file security and sophisticated footnoting. For a start. And we want to help.

We found two terrific writers who know your old word processor inside and out, and have used it for years. Now they've written a guide to help you switch to WordPerfect. So instead of starting from scratch, you can use what you've learned, to learn Word Perfect,

The book is easy to read, yet comprehensive. And from now until October 31, we'll send you a copy for just \$1 (to help cover postage).* But that's not all. In the book you'll find a rebate coupon, worth \$40 when you purchase WordPerfect from your favorite software supplier (pirates excluded) before December 31, 1987.

The rebate offer is limited to diehard WordStar users in the United States and Canada only. Large account, government or school customers with special pricing may request copies of the book, but are not eligible for the relate.

It's never been easier to change. So call (801) 225-5000 and order your survivor's guide today. All you need is your WordStar serial number and a credit card number (for the XX \$1 postage charge).

VAROOMM

ONLY ORCHID GIVES YOU SO MANY WAYS TO TURBOCHARGE PC ENGINES.

With Orchids family of turbos, you can get the performance you bought a computer for in the first place. Lightning spreadsheet recalculations. CAD screens that regenerate in a flash. And large data bases that sort without putting you to sleep.

ORCHID'S TURBO FAMILY

	TimpTurbo 286	PCturbo 280e 10694z	36f 366
Host Computer	PCXT	PCXTAI	s)
Reference Speed	3xXT	6.5 x XT	3442
Accelerator Sens	Reptoos 8088	Co-processor	Replaces 80294
CPU	8.999	10 999 tr 80056	18-M/6 90356
RAN	SK.	10/2 MB	64.K

YOU HAVE AIR	YOU GET	WITH				
	3×59(0)	Tayluta 286				
-	A.5 X SPEED	POwbs 286e				
AT	3×9/00	Jar 264				

GET THE EDITOR'S CHOICE:

Tinylurbo 286."

The Tinylurbo 286 supercharges your XT to run three times faster. Yet it's so small it takes up only half a slot in your computer. Just two reasons why PC Magazine named it the

Editor's Choice.
TinyTubo 286 gives you a high level of compatibility. So you can run software like Lotus and Windows—with EGA graphics, EMS memory, or networking cards—at AT speed, You can even go back to your PS regular S088 chip, which remains in the system, giving you 100% hardware compatibility.

ADD AWESOME PERFORMANCE: PCturbo 286e."

For power users, the front runner today in accelerators is clearly the PCturbo 286e." It revs up to 6.5 times faster than an XT, or up to 2 times AT speed—giving you the world's fastest screen 1/0. Plus the PCturbo 286e comes factory equipped with 1 Megabyte of fast RAM, expandable to 2.

The PCturbo 286e is also a powerful tool for developers and systems integrators. With features like an optional 10-MHz 80287 math chip, and coprocessing software for concurrent foreground/background tasks, the PCturbo 286e lets you build minicomputer-like performance into standard PCs.

MOVE YOUR AT UP TO 386 HORSEPOWER NOW: Jet 386."

Take a look today at the price/performance leader in desktop computing, the Jet 386" Depending on the application, it's up to three times faster than an All And turice as fast as some highperformance minicomputers. Yet you don't have to buy an expensive 386based computer to get this kind of

horsepower.

More importantly, the Jet 386 uses next generation technology, the 80386 microprocessor. So you can run all of the current software for the AT now, and 386 soft-

ware too. Add a Jet 386 to your AT today, and you can extend the life of your

FROM THE COMPANY THAT STARTED IT ALL.

Orchid introduced the first turbo for PCs, and has since become the number one supplier of PC accelerators. For details on our full line of accelerators, graphics, networks and multi-function cards, call (415) 683-0300

local dealer.

Toy links 286, Planks 286e and Jan 286 or trademake of Orthol Technology, All affect product names on independent of their manufacturers.

ONOUR TICHNOLOGY
45365 NORTHOLOGOW WEST PROMOTE LANGUAGE CONTROL

Tinylorbo 286: 3 Times See us at PC Expo Booth #96T





investment-

for a fraction

of the cost.



OUICK LOOKS

How to Become a Pamphleteer for \$15

HANDS ON

BY EDWARD MENDELSON Recine for printing a namphlet: take one Laseriet, add Pamphlet, pour in a text file, and

Martin Beatties's Pamphlet does one thing and does it well. If you give it an ASCII file of. say, 24 pages, it will set your Laseriet to landscape mode, se-

lect the small internal font, and then print out pages 1 and 24 side by side on the first sheet. 3 and 22 on the second sheet, and so on. It then prompts you to put the pages back in the paper trav in exactly the same order they came out of the printer. Then it prints the pages that belong on the reverse sides of the ones it printed earlier. When it's finished, it asks if you want it to

print a separate title page.

You can fold the sheets along a line printed down the middle and have your file in pamphlet form. Or you can print binder-ready pages by cutting the sheets in half and punching holes in them. Pamphlet can add space in the margin of oddnumbered pages so holes won't

interfere with the text Pamphlet is shareware. You can download it from many bulletin boards and try it before buying it, or you can purchase it directly from the author.

Of course, if you don't like things that are this easy, you could spend a few hundred dollars on a desktop publishing program and devote a few hours of work to doing what Pamphlet does for you automatically. List Price: Pamphler, \$15.

Requires: HP Laserjet or printer with Laserjet emulation. Martin Beattie, 9190 Rolling Tree Ln., Fair Oaks CA 95628 CIRCLE 430 ON READER SERVICE CAR

Set-It Takes Control of the Printer

HANDS ON

BY BARBARA KRASNOFF It's not unusual for software to react rather oddly to a particular printer. Perhaps your spreadsheet's compressed mode isn't as clean as your word processor's; maybe your database insists on using draft quality on documents you need in near letter quality.

Users who need more con-

trol over their printers may need Map Systems' Set-It Plus, a control package made up of two memory-resident programs: Send-It and FixPrint.

Together, the programs are a neat way to send, change, or block printer control codes.

Send-It allows you to instantly invoke and send a variety of command codes to your printer through a single-line menu on the bottom of the screen. Once you've entered

flects the change. The Send-It disk also includes SetUp, a small program that sends control codes to the printer directly from DOS and TextEdit, a simple but well-organized line editor that can be used to create Set-It Plus files containing your printer control codes. There's also a preprogrammed version of Set-It Plus available that operates only with Toshiba/Oumeemulating printers. (The gener-

your code, printer output re-

ic version comes with code setups for Toshiba, IBM, Okidata, and Epson printers.)

Set-It Plus isn't a very polished program. But once set up. Set-It Plus can make the lives of printer owners a bit easier List Price: Set-It Plus, \$49.95 Regulres: 12K RAM for SetUp, 14K RAM for Send-It, 18K RAM for FixPrint; one disk drive; DOS 2.0 or later. Not copy protected Man Systems Inc., 1120 NASA Rd. One, #320, Houston, TX 77058; (713) 333,9640

CIRCLE 431 ON READER SERVICE CARD

Reader Helps You Get a Quick Read

HANDS ON

BY EDWARD MENDELSON Imagine a speedy word processor that only lets you read files and won't let you edit or create new ones. That's what you get with INFOH's file-reading program, Reader, designed to make reading text files easier. Reader lets you scroll at

varying speeds, search for strings, and jump to a line number or to a percentage of the length of a file. You can also leave temporary "bookmarks" while you scan different parts of the text.

The program uses a unique Readerscroll mode when scrolling through a file. Instead of

displaying text as it moves con-tinuously up the screen, Reader ple gradually over the old one, while a dividing line moves makes each new text screen rip- down the screen to indicate the

different nature of the best, and we use displays her like it tell-book helder even a state. Ander excellent of an else show recitled lateral of displaying test as it were continuedly done the score of the state of displaying test as it were continuedly done the score of the state of the state of the state of the state of the displayer the state of the s

You can contomine Bendar's display colors, but the default one block practices on a white background. The means claims thin to be the ment place may be read bank on account to it is puzzilen to find that the will be not be not been as the puzzilen to Find that the will be not been as the puzzilen to Find that the will be not been as the puzzilen to Find that the will be not been as the puzzilen to Find that the

Reader browses text files in an unorthodox way. Instead of scrolling the entire scree line by line, for example, one screen scrolls onto another.

progress from old to new material. When it reaches the bottom of one screen, the divider jumps to the top and displays the next screen. The manufacturer says this mode "coincides with the way one normally reads a printed page." I imagine some people will welcome the change; I found it distracting and uncomfortable.

I suppose if you read volumes of text on-screen and aren't satisfied with your word processor's scrolling speed, Reader might be the solution. I prefer to read at my own pace. List Price: Reader, \$69.95 Requires: 256K RAM, one disk drive, DOS 2.0 or later. Not copy protected. INFOH, P.O. Box 37745, Honolulu, HI 96837; (808) 538-3111

CIRCLE 432 ON READER SERVICE CARD

PC UPDATE

edited by Peggy Gavar

Manuscript Laser Support

Lotto Development Corp. 5 Manuscript has added driven for via lawer printers the BP LaserJet II. Xerox 4045 Lawer CP Model 50. Com LBP-8 AT 30 LBP-8 II. Zeno GQ-3500, and IBN Pageprinter 3812. The Lawerlet driven canable Manuscript as Coccost on Orion Lawer Corp. 10 Company of the Comp

Datavue Laptops

Datavee has announced an upgrade program that allows all Datavee laptop owners to upgrade to its gaslit screen. For \$875, owners of carly models without RGB ports can exchange their old portables for a new gasti-screen model with 760K types of RAM and not disk drive. Owners of later models can purchase the new placed the 90-day ownership for its Snap 1+1 and Spark laptops with a 1-year program. Datavee, Norrons, Ga. (404) 564-560.

IN BRIEF

Quadwar Cupp. has reduced the prise of its Quads lazer lise neprinter by 5700. is 53,795, and its Quads Lazer lise neprinter by 5700. is 53,795, and its Quads Lacer Plans by \$500, in 54,4953. double-like properties of the principal control of the

IBM Switching to PS/2s; ATs Going, XTs Gone

IBM has changed its mind about its PC line. Despite assurances made when the Personal System/2 line was introduced on April 2 that IBM would continue to make XTs and ATs. IBM vice president William Lowe announced in late June that PS/2s will be the only personal computer sold by IBM before long.

"We're out of PCs—the PC1. PC-XTs we're still producing, but what we are producing are already committed. We anticipate being out of 286 XTs within the next 60 to 90 days. We're work ing with our distribution channels to determine how many ATs to build." Lowe said he expects the company will dis-

continue the AT line in coming months.

Demand for PS/2s has been so strong, he maintained, that a third assembly line has been added. In June, IBM reported building 3,800 PS/2s a day; 2,000 Model 30s. 1,000 Model 80s. and 800 Model 80s.—Gus Venditto

PS/2 WATCH

Microsoft Mouse Adapter for the PS/2 Mouse Port

The Microsoft Mouse IBM PS/2 Version plugs into the mouse port on IBM PS/2s. Priced at \$175, the PS/2 version is compatible with Microsoft's current Version 6.0 drivers. The mouse is bundled with Brightbill-Roberts's



Microsoft Corp.'s PS/2 mouse is essentially a serval mouse with a special adapter for playeong it was the PS/2's mouse port.

Show Partner, Version 2.0, and Microsoft Paintbrush. Microsoft Corp., Redmond, Wash.: (206) 882-8080.

Tecmar EGA Master 480, 800

Tecmar now has a driver for its EGA Master 480 and EGA Master 800 display boards that provides BIOS-level compatibility with VGA's 16-color mode, while still taking advantage of Tecmar's 800 by 600 pixels in 16 colors. Registered owners can upgrade for free by calling the company at (216) 349-1009. Tecmar, Solon, Ohio.

Show Partner F/X in 256 Colors

Show Partner FIX, upgraded from Show Partner FIX, upgraded from Show Partner Nevision 1.0, supports IBM* 946, 640 by 480 16-clotr and 320 by 200 256-color modes. Among the 53 special effects is the ability to shake, spiral, or drip an image. A memory management scheme reduces disk access during animated sequences. Show Partner FIX resists can cause a 550 credit toward the purchase of FIX. Brighbill-Roberts, Syracuse, NY, (315) 974-3400.

1-800-354-7330



A or B Only

256K Nemory, 360K Brand Name Floopy Drive. 135 Watt Power Supply Slide Case, AT Style Keyboard, 4-10MHz Clock Speed, (Keyboard Selectable), 8 Expansion Stats



C or D Only

to 1MB on Motherboard, a 1.2MB Floppy Drive, 192 Watt Power Supply, Dual Hard Drive & Floppy Controller Card, AT Style Keyboard and clock/calendar with Battery Back-up.

PC/AT

\$ 749 \$ 816 \$1566

lonochrome System MITTurbo XT MIT Monographics Card With Protes Port MIT Amber Monitor With Servel Tilt Stand MIT I/O Serial Clock Card

SYSTEM B MIT Turbo XT MIT Color Card With Printer Port MIT10 Serial Clock Card Sure Suppresso

SYSTEMC MOTIONAL AT MIT Monographics Cert Mith Printer Port With Swizel Till Stand MIT AT Multi 10 Card MIT 4 Outlet rge Suppressor

SYSTEM D MIT AT Color Syst MIT 10 MHz AT MIT Color Card With Poster Port MIT AT MUNITO Card

roe Suporees

Surge Suppressor Turbo PCXT w 640K 8 1 Drive with System Order Only Turbo PCXT w 640K S 2 Drives with System Order Only PCAT 8 MHz w 1024K, 1.2 Foppy with System Order Only

Turbo PCXT w1640K, 1 Drive, 30 MG with System Order Only PC/RT 19 MHz w1024K, 1.2 Foggy, 40 MG with System Order Only

Alps
Al Models
Brother Privates
Obscent Printers
MSP 15
MSP 25
MSP 25
Penter 25
1200
Citable
C-35
635
Citable
C-35
637
Citable
C-35
Citable
C 358 358 309 458 445 165 441 758 Ratioperd Farsons Busines Fattrer . 5r Fattrer . Sec. Fattrer Dual Drive 1 299 Call Tothiba T-1100 Supertiesz T-3100 . -AST Set Face Plus Other Models ECATORIO Hercules Al Modes 155 149 295 375 419 229 341 Call At Above Buards

Automator 950 Automator 480 5 Para Outer FGA Plus

Leading Edge Word Processor Leading Edge With Mrs Spall & Marg Microsoft Word 3 11 Multimate Advantage 3 PTS Professional Wise Volkownier 3 # # 10 / 10 / 10 # # 10 / 10 / 10 # # 10 / 10 / 10 # # 10 / 10 # 10 / 10 / 10

968 1629

Call

Cat

Hansel Graphics Microsoft Buss Micros 6.0 Hotel E. Microsoft Buss Micros 6.0 Microsoft Serial Micros 6.0 PC Buss Plus Micros (New Yor) PC Micros (New Yor)

Call Call 106 Call 20 275 275 28 M CA1 24 M CA1 24 M CA1

\$392 219 Call 236 6 75 84 106 322 380

Order Line House Mon-Fri 8:30 a.m.-5:30 p.m. Searchay 9:00 a.m.-1:00 p.m. Order Processing 1802; 224-6345 - Mon-Fri 10:00 a.m.-3:00 p.m. CIRCLE 123:ON READER SERVICE CARD

Oune 101 Pts Green 101 Pts Amor

Which Man Uses a Toshiba Laptop?



Mea Cuipa

Fill in the Missing Gaps in Your PC Magazine Library —House ad for back issues, Volume 6 Number 12, page 409

Toshiba's 240-Pin Printer Packs New Features in a Smaller Case —Headline, Volume 6 Number 12, page 45

A reviewer inadvertently included his MCI Mail password in a screen shot accompanying a review of Crosstalk Mark IV. —Volume 6 Number 14

Several renders taking out \$28 PC Magazine subscriptions received a computer-generated "limited offer—extend your order for 2 more issues by sending a check for \$48.97."

The Model 30 "even comes with the cache of an AT-style system lock-and-key." —Volume 6 Number 10, page 45 (make that "cachet")

Best Seller

Query Processing Techniques for Disturbed Rational Database Systems

-Book title, Discount Books catalog, Vineland, N.J.

Storm Warning

Seventeen of the 20 stocks on a USA Today "death list" of stocks to avoid, compiled by market technician Stan Weinstein (the didtor of the Professional Tape Reader), are hightechnology related, including AGS Computers, Ashton-Tate, Autodesk, Compaq, Micropolis, MiniScribe, Microsoft, Motorola, Oracle, and Seagate Technology.

Could Your Copy Of 1-2-3 Do This?

"Like Lotus 1-2-3. [Ovation's] integrated program had a strong word-processing function and could move numbers to text from a spreadsheet with ease."

—The Wall Street Journal, June 12, 1987

Talk About Smart Spelling Checkers

"The [\$599 Magnavox] VideoWriter: An efficient combination of screen, printer and disk memory that corrects mistakes before they're made." —Arizona Republic, May 24, 1987



Crackdown

"With cooperation from U.S. and foreign government officials, publishers also hope to conduct raids on [overseas software] pirates and persecute them for copyright violations."

—InfoWorld, June 1, 1987



Heard or nere ampthing offlows, unusual, or just plain dumb about the comparer industry Send your offerings in Cammuniquis, PC Magazina, One Park Avenue, New Yark, NY 10016 or NC 1 Mail 157-3011. Countributors review 550 and a PC Magazine T. John. In case of displicate entire, the earliest postumed prevails. Sorry, but entires can't be on knowledged. Please to belief 2000 on more and address typin legibly), a depttine phone mother, and your T-first size. And please, don't send classified ads for lappy drives are before quality printers.

Winners this issue: Robert Cobb (pirate persecution), Claire Pieterek (Ovation), Bill Tevet (VideoWriter), Dean Hannotte (disturbed rational database), Rager Lembke (missing gaps), Karl Meadons (2 more issues), Terrence Kneebone (PS/2 cuche), Chairles Aker (top products).

Before you choose between the best PC terminals, read this head on comparison.



Totally-compatible with the IBM AT, right down to keyboard layout. But with a more resilient feel

14"; 132 column, high resolution screen gets more out of programs like Multiplan and Lotus 1-2-3.

Boosts productivity with easy to read character set and advanced ergonomics.

Manufactured, serviced and supported by the company that ships more terminals than anyone but IBM.

At \$599, the Wyse WY-60 delivers unrivaled value if you're looking for sharp resolution, advanced features and superior overall quality in an AT-compatible alphanumeric terminal.

Likewise.

Likewise.

Likewise.

Likewise.

At \$649, the Wyse WY-99GT delivers likewise in a graphics terminal, with Hercules and IBM CGA compatibility.

So if you're looking for the best terminal to turn your AT into a multi-user system, there's

You can get more You just haven't put

Just put your finger on a Microsoft* Mouse and you'll be getting more done in no time.

and youll be getting more done in no time.
Because the Microsoft Mouse comes with
a fistful of software including presentation
graphics programs like Show Partner" and
Microsoft Paintbrush* and Expert Mouse
Menus for your favorite business programs.

To enter a command with a Microsoft Mouse, just find it on the on-screen menu and click. Not having to enter a handful of keystrokes means you can work much faster.

This mouse knows its 1-2-3's.
The Expert Mouse Menu for use with
Lotus* 1-2-3* gives you faster access to

because it's easy to highlight and change or replace text.

And when you're finished, use an Expert Mouse Menu to back up a DisplayWrite" 3 document with just two dicks. Or use our mouse to load MultiMate" documents without ever having to type out a file name again.



And now you can use the numeric keypad on your PC because, with our Expert Menu, you'll never suffer from not being able to use num-lock again.

Draw attention to your presentation.

Show Partner and Microsoft Paintbrush help you and your Microsoft Mouse create presentation graphics and special effects that will keep your audience focused on the point at hand.

Show Partner lets you bring your presentations to life: Like building a graph piece by piece as you're presenting your case point by point. It even lets you pull graphic images from other programs like Paintbrush or 1-2-3.

You'll never be alone with a Microsoft Mouse.

The Microsoft Mouse is supported by over 200 software applications and multitudes of users. In fact, the readers of PC World magazine have given the Microsoft Mouse the

World Class Award for the past three years. No wonder it's the best selling mouse on the market.

Buy a Microsoft Mouse and get a ton more done by just lifting a finger.

Microsoft Mouse Now Available For Personal System/2

The SmarTerm Theory of Software Evolution What *Really* Happened to the Dinosaurs?

They were replaced with

After you've tried SmarTerm terminal emulation software, you'll think other PC-to-minicomputer communications links are as advanced as dinosaurs.

SmarTerm gives your PC exact feature-for-feature terminal emulation, error free data transfer and programmable softkeys.

SmarTerm already is known worldwide as the leader in advanced DEC*, Data General* and Tektronix* terminal emulation software. Now Persoft soars to greater heights with these new product introductions:

NEW! SmarTerm 240 Version 2.0 features precise DEC VT241* color graphics terminal emulation for full-screen, four-color display of ReGS* graphics pictures!

NEW! Smarlerm 2392 emulates the popular Hewlett-Packard HP2392* text terminal!

NEW! SmartMOVE combines power, ease-of-use, error-free file transfer and exact DEC VT100 emulation in one "smart" communications software buy!

SmarTerm and SmartMOVE are available through your local dealer. If you would like more information about SmarTerm or SmartMOVE, circle the appropriate reader service number below. Or contact:

Persoft, Inc. 465 Science Drive Madison, WI U.S.A. 53711 Phone (608) 273-6000 Fax (608) 273-8227 Telex 759491



persoft

SmarTerm Terminal Emulation Software
... The Natural Selection



LOOK-AND-FEEL FOLLOW-UP



Hell hath no fury like the wrath of a buying public scorned. Just ask General Motors. ''Look and feel'' may do the same for the software industry.

ut there in the consumer market, customers telegraph their preferences with changes in buying habits so subtle that a tenth of a percent's change can galvanize the captains of industry. Market research has become a highly evolved art form. Yet the captains sometimes can't read a sea change even the killer wave she breaking over the bows.

Things are different in the personal computer industry. The opinion leaders are people like you, the readers of PC Magazine. They make informed decisions on what products to buy and are generally key players in their organizations.

That's why we solicited your opinions about the look-and-feel litigation back in our May 26 issue. So glad we asked. More than 40,000 of you responded, an unheard-of level for such polls in magazines. Here are the results. If the captains of this industry have a lick of sense, they'll take

First and foremost, 78 percent of the respondents felt that the look-and-feel litigation is having a negative effect on the industry overall. But they weren't deterned from purchasing clone software. In fact, only 14 percent of the respondents said the suits would make them less likely to buy.

Our respondents also have a fairly liferal interpretation of what constitutes clone software. We gave them two choices: products that duplicate the appearance and command structure of another product, yet sell for a lower price, and products that use he same command structure and general appearance but provide additional commands, functions, or greater performance. Only 29 percent felt that the second category should be considered clones. Companies that bring look-and-feel liti-

gation would do well to examine the effect it has on their public relations. The response most often mentioned (27 percent) was, "It scare me, you never know whom they'll turn on next." The next most popular response was, "They're forcing training costs up by caussing needless change when consistent operation is more important." Only 15 percent felt that the comparation." Only 15 percent felt that the comparation.

tant." Only 15 percent tel that the compaines were justified in suing as a means of protecting their intellectual property. A soil 20 percent said that they're ignoring the best interests of software users. A mere 10 percent bought the off-advanced notion that nonduplication of command sets makes other software vendors more creative and keeps the state of the art moving. Training coss versus acquisition costs

Training costs versus acquisition costs are a hot topic of debate in corporate America. An eyeball analysis of the results

PRICE SENSITIVITY The most commonly mentioned reason for buying clone software was price. Sixty-three percent of the respondents have bought clone software, and 86 percent of them said that it saved them or their companies money. Another 13 percent bought because it of

says that our respondents demand that a

product be 60 to 100 percent better than its

predecessor before they'll take the plunge.

No wonder they don't want each and every

product to have a new user interface.

fered a superset of features.

The fered a superset of features.

The fered a superset of features.

The most commonly cited reason for doing so (44) percent) was that they needed greater support than smaller software publishers can offer. The second most popular reason, at 36 percent, was skepticism over the clone software 's claimed compatibility. A quarter off those who rejected clone software did so because

their expectations.

Coming back to the price issue, only 16
percent of those who rejected clone software did so because price is not an issue to
them. Clearly, even those who won't have
anything to do with clone software remain
aware of the cost. I wonder when the big
manufacturers last did price sensitivity

the clones' performance didn't meet with

Our survey included a trick question.
The questionnaire was formulated by PC
Magazine's editors and by representatives
from a variety of software and hardware
companies. Our list included the compa-





Your Hardware and Software Source

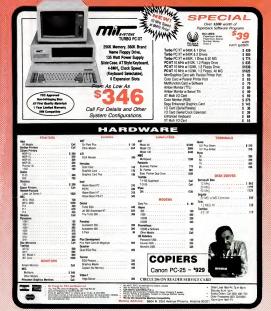
Low Prices are BORN Here, ARISED Elsewhere!



Fox Base Plus	
Column	
Column	_
### \$4.50 \$1.00 \$1	
Description 1	
Add Color American Americ	MICE
Author A	Oil
Compared	Call
Address According	54
Company Comp	1175
Continue	325
Selection Sele	
Section Sect	. Call
Section Continue	259
Death Direct 10 Deat	Call
Section Control Cont	85
More	106
More	164
Section Cont. Co	119
Secretary Rep. 1.5 Secreta	31 65
Second Processor Application 20 Second Processor Application	Ver) 99
None of Production Continue	
Non-mark	29
Page Column Col	32 Gall
## For harder	Gall
The control of the	47
Marti MC-CD 100 1 3 Sente (Organise) 5 Periodic (France) 1 Martin MC-CD 100	183
Manut MD-07 On 100 100 50 every 1 3 Provision flore (Dut 340 Horse Teller Provide Manut MCO (Provide Viru) 340 Horse Teller Provide Manut MCO (Provide Viru) 340 Month Provide V	AGEMENT
Main BSC QV 100 65 South Mont 66 State Life flower Wave flow for C	aper II \$ 282
Sym 20 c0 103 Sprinty Call Réase (900 Symm V Call Trimens 20	219
Sony 5 - Unit	Call
Turbs Editor Tool Box 35 Reflex 79 ACCESSO LANGUAGES Unlock A or 8 Plus 22 VF Expert 47 Copy il Option Seed Base Complex Managed 22 VF Expert 47 Massemptor	
Basic Company Macrosoft page Unicok D Pag. 43 VP Info 47 Masterpage	
Basic Compler (Microsoft)	\$ 75
COMMUNICATIONS Masternace Renote	587
Forman Compiler (Microsoft 4.0 245 Cambridge Analys) . \$ 59 Compulsive States No. \$ 19 Microsoft Mach 10 w Windo	ws & Mouse . 322
Lattice C Committee 296 4 Word	9
Bac Assertion (Microsoft) 83 Policy 10.2 Microsoft Access 157	350
Ryan McCarlan Fortran 198 (chut Marcarriet 286 Mintel I	TIMG
Risen McFarlan Cobol 539 Lotus Report Winter 57 Parrices 58 RPLIGIT ARI AP Parrices 59 RPLIGIT ARI APP Parrices 50 RP	2160
	. AR. AP . 379
Ouck Basic 3.0 SS Silk 138 INTEGRATIVE SOFTWARE DAC Easy Accounting . Turbo Basic SS Superatic 4 Call About 55 DAC Easy Provided .	38
Turbo Jumbo Park (New Yor) 169 Twin Classic	61
Turbo Pascal w 8087 & BCD 55 VP Planner	
Turbo Prolog	of 125
	LP, Payroll, 408 etc.
Turbo DataBase Tool Box 36 Tobias Managing Your Money Call Symphony	Call

1-800-426-6659

ORDER LINE



■ EDITOR'S SCREEN

nies currently involved in litigation. The question read, "Suppose one of the largest hardware or software companies (call it 'Goliath Corporation') embarked on a strategy to continually survey small-comnany software offerings (for example, from 'David Enterprises'), picking the best of them, replicating the look and feel of those packages-perhaps with minor modifications-and selling them under the Goliath brand name. Should Goliath (a) be found guilty of copyright infringement and be required to forfeit the profits on the David Enterprises clone, or (b) be allowed to continue the practice legally?"

It's a straight role reversal. In this hypothetical case, the big company preys upon the creativity of the little one. The real issue before us is whether the little guys are preying on the big guys' creativity. The question plays right to the American sense of fair play, equal chances, and rooting for the underdog. A solid 61 percent of the respondents saw the situation for what it was. They declared the practice should be legal no matter who was doing it.

WHO'S WHO? Some of the most interesting survey results came out in the demographics. The results of the survey closely match what we know about our overall base of subscribers. For instance. 36 percent work in MIS/DP or an infocenter/PC services group. Of those who do not work in a directly computer-related area, 32 percent work in general management or administration. The next largest group, at 28 percent, is engineering. The rest run the gamut of finance, accounting, purchasing, sales, and other corporate functions.

Our final question was aimed at the respondents' point of view. A quarter of them are involved in the manufacture and sale of PCs or related products. We can isolate them statistically, but from what we've seen, the responses run about the same on both sides of the fence.

Can the industry afford to ignore the results of this survey? Of course not. The people who answered it are precisely the targets of the major marketing campaigns. The hearts of the respondents are worth immeasurably more than their minds. Backlash is alive and well in the computer industry, and we've seen only the first wave.



Peachtree Complete Accounting for Just \$199

Everyone's Asking How Can We Do It?

When you reduce the price of an 8-package accounting system from \$4,800 (or \$600 a module) to \$199 for the complete set, people are bound to ask questions. Here are some of the most popular ones we're hearing

O. How can we afford to sell Peachtree Complete at such a low price? A. We've reduced our costs without reducing product features. Peachtree Complete has been repackaged into one set that includes more thorough and better organized user instructions. We've also streamlined order processing and reduced overhead. it is faster and easier to buy our

Peachtree has long been the first name in accounting software, so we've had time to completely amortize our original development costs

plus make over 100 major additions. These enhancements include multi-company capability, menu driven installation and removal of copy protection. Consequently, you're getting a proven product at

a better price. We also "unbundled" support (so you only pay for what you need when calling our toll-free technical support hotline) and established a network of local dealers to serve as independent Peachtree Support Centers.

O. What does Peachtree Complete include? A. I. Eight Integrated Software

expert, to explain accounting concepts

General Ledger
 Accounts Receivable
 Sales invoxing
 Accounts Payable
 Inventory Control
 Fixed Assets
 job Cost
 Payroll

An Installation Guide to lead you step by step through our simple installation procedure An Accounting Primer, written for Peachtree users by an industry

Tutorials on each module with sample data to make learning easier. A complete Reference Library with detailed instructions in plain English on all software functions

O. Is Peachtree Complete really the same product that used to sell for \$600 per modulei

A. Peachtree Complete is basically the same accounting system that both Peachtree and IBM sold for about \$5,000 but with substantial improve ments in function and presentation.

With more than 150,000 users to its credit, Peachtree Complete has been the PC World Class Winner in its category for two of the last O. What's the difference between Peachtree Complete and the \$69.95

systems A. Peachtree's system is called Complete because it contains the eight most needed accounting packages (including payroll) and all reference

materials for one price. Remember, it was designed as a \$4,800 Call Now to Order or for a Dealer Near You

In Georgia, call 1-404-564-5800

accounting software system

The \$69.95 systems, on the other hand, are incomplete. They were designed to sell for \$69.95 and require the purchase of additional modules to be comparable -- payroll, \$49.95 more: tutorials, \$19.95 each: etc. Everything is a la carte

O. How soon will I outgrow the system?

A. Peachtree Complete handles revenues up to \$21,000,000, so only the largest companies will outgrow the system. The ability to process data for an unlimited number of companies is one of the system's biggest selling points.

An optional multi-user module soon to be available allows Peachtree Complete to be installed in a Local Area Network. And Peachtree Data Query, for just \$199, lets you quickly transfer your accounting data

to many popular spreadsheets and databases, as well as produce custom reports.

O. What if I'm not satisfied with Peachtree Complete?

A. When you purchase Peachtree Complete directly from Peachtree

Software, you're protected with a 30-Day Money Back Guarantee (an option even the most expensive accounting products don't offer). If you're not satisfied, simply

return the complete product in saleable condition within 30 days and your purchase price will be promptly refunded. InfoWorld Report Card

Superb value, easy to use, good manuals...We rate Peachtree's Complete Business Accounting System an

excellent value." - Richard Morochove. InfollorId Review Board. Forms Direct from Peachtree Enjoy the convenience and economy of buying your accounting forms direct from Peachtree Software. Guaranteed compatibility Call 1-800-553-6485 to order forms

Compare Feature for Featur

Accounts Receivable/Invoicing

Open sem or balance forward customers Simultaneous updating of Inventory and

user-defined discount & due dates Cash requirements forecasting by due date
 Checks provied with detailed stub listing.

 Up to 21 000 inventory items Automatic origing with 5 levels for each item Pixed Assets

• 5 property and 8 asset classification categor

• 5 different methods of figuring depreciation

Built-in current year federal, state, city and county tax tables for all 50 states.

Requires MS-DOSPC-DOS version 2.0 or higher with 12fK of RAM. For use with the IRMF PC - PC XT, PC AT and compatibles, and Personal System/2. IRMF is a registered trademark and Personal System/2 is a undersuch of International Daniers Machines.

To Order By Mail Send \$199 plus \$12.50 Shipping to:

4355 Shackleford Road, Dept. PCM-09, Norcross, GA 30093

FRESH AIR DEPARTMENT: WHAT*OTHERS* ARE SAYING ABOUT

"CLARION is a programmer's dream. I predict it will become the standard programming system for all manufacturers developing proprietary business applications. It includes all the good things about every other language I've ever used, but none of the bad. Screen and report development is a delight.

TRADITIONAL LANGUAGE

"CLARION allows us to do live application design with side-by-side user participation. We very rapidly

produce an application prototype, one that actually functions with field editing, help screens, and file processing. Design problems that are usually encountered downstream are eliminated

up-front. - James Hatch

SYSTEMS STRATEGY / ARCHITEC AETNA LIFE AND CASE

 Richard Greenbaum ACADEMY ELECTRICAL PRODUCTS
New York, NY

"CLARION is the language I've always dreamed about. I've been able to slash development time by a factor of five. I'm developing database programs in less than two hours using the Reporter utility; and with CLARION, I know I have rock-solid code."

- Michael Aurelius PRESIDEN COMPUTER EASE, INC Sauk Rapids, MN

"CLARION's file handling features are superior. In research, we never know how we will want to use the data in our case history file. With CLARION, we are not restricted in adding fields, keys, etc. But what's really amazing is the capability CLARION gives us to create custom screens and pop-up windows.

The bottom line is that we're now able to write better applications in a lot less time." - Dr. Paul Tocci

BIO-CHEMICAL GENETICS LABORATORY UNIVERSITY OF MIAMI MEDICAL CENTER

"CLARION makes programming in traditional languages impractical. We're developing custom applications faster, with exciting end-user features like point and shoot menus, CLARION has really out us in the commercial soft ware business.

— Mark Volz MANAGER OF SOFTWARE SERVICES DATA DISTRIBUTORS, INC.

YOUR CLARION PROGRAMS NOW READ & WRITE dBaselli® FILES! Our new language extension module (LEM) lets you harness all of CLARION's productivity power

and exciting screen & report generation without and exciting screen & report generation without converting your dBase III® files. So these files remain simultaneously compatible with your existing dBase. PRGs. All this for only \$49.50. And with this LEM and our Translator utility (\$95.), your CLARION applications can use dBase III® files and be distributed as .EXEs with

no run-time cost. CLARION runs on any IBM® PC, PS/2, or true compatible with 320KB of memory and a hard disk drive, and costs only \$395



There is a 30-day moneyback guarantee, so now you have every reason to ..

CALL TODAY: To order CLARION or to get our 16-page color brochure and the Sample Program diskette.



150 EAST SAMPLE ROAD

POMPANO BEACH, FLORIDA 33064-3597

305/785-4555

Copyright 1987 Barrington Systems IBM is a registered trademark of International Business Machines Corporation. dBase is a registered trademark of Ashton-Tate

THE BS/2 OPERATING SYSTEM—SCANDAL IN ISTANCIA S.S.R.



Some strange doings in a far-off land may sound vaguely familiar to students of the microcomputer scene. But be careful not to read too much into them.

only a few insiders, some admen, and the CIA know about it, and none of them understand the phenomenon completely.

It's the mystery that surrounds a smallish, little-known country near the Yugoslav border calling itself Istancia S.S.R. It has a technology industry that could compete on the international market if its socialist government would only allow exportation. Nonetheless, it has managed to thrive on its own juices and has produced a microcomputer industry much like ours. A few sharp marketing types visit there once in a while to see if they can learn anything about our own microcomputer business. which it coincidentally parallels. Recently a few fellows have returned, and I've managed to piece together some of the facts they've gathered.

IN BED WITH BIG RED The Istancia software industry is dominated by Millisoft Corp. and has been dominated by it ever since Millisoft got into bed with the big mainframe maker Istancia Business Machinesky, coincidentally called IBM in Istancia and nicknamed Big Red. Millisoft is owned (with state support) by Gil Batesky, a young entrepreneur. Batesky started off by designing the language Ivan BASIC for the first millicomputer from Istancia, named the Polaris 707. It used the Volga 777 milliprocessor, the first milliprocessor used for millicomputers. I should mention that millicomputers are sometimes called People's Computers. There are even a few interesting magazines like People's Computing, PC Prayda, PC Weeksky, CCCP PC, Doublebyte, and Ben Pulaski's Computer Gazette.

The big dough in the industry was made

over the years by two hardware companies the Stem Computer Company, whose founder, Steven P. Zbrinkovsky, claims fakely to have invented the whole notion of a People's Computer with his Stem II, and Istancia Business Machinesky with its BIM PC (not to be confused with our IBM PC). Butesty brooked up with IBM and Soldi an operating system to use on its machines. The operating system, or GOS for short.

PEOPLE'S SYSTEM/2 Anyway, the his is little known. What's most interesting is the latest developments in Istancia. A few months back IBM announced its new line of People's Computers, called the People's System/2. It includes a new architecture and one of the models has the nifty Volga 799 double 16.



bit milliprocessor. The hubbub and goossip, whough, surround the announcement of a new operating system for the muschine. Dubbed BS72, the new operating system is supposed to be ready in the first quater of 1988, but all the insiders know that this isn't true and BS2 won't hit the streets under the surrounce of the surrounce of

Af the most recent free sentiner all helf broke loose as developers rioted and burned down the Millisoft headquarters when they found out that Millisoft dish' know a darn thing about BS2. "This is to use a darn thing about BS2. "This is us years ago with its ridiculous VisiOn-Off," said a dissenter. VisiOnOff was years ago with its ridiculous VisiOnOff was proposedly a true windowing operating system for use on the PC. It was announced before it was designed. By the time It came out, nobedy cared, Dissenters with the proposed of the pro

SMOKY WINDOWS Even more interesting is that Millisoft seems to be promoting its operating system shelf, called Levolors. It seems that to write for BS/2 you have to write Levolors applications. Most analysts wonder now if BS/2 is nothing but hot air—a smoke screen for other projects. Nobody knows for sure.

Most of this information has been given to the CIA for evaluation. I honestly don't see how it applies to anything happening

THE WORLD'S SMARTEST **ANSWERING MACHINE**

PERSONAL VOICE MAIL

Hello. I'm not available right now. Please wait for the tone and leave a detailed message. Touch the star to listen to what you've recorded."

PERSONAL MESSAGES FOR PREQUENT CALLERS

"Hello, I'm not Dad! I'm not here, but my computer knows exactly where I am and will pass your message on to me immediately. Woit for the tone and tell me where you are. I'll call you right back!"

REALLY PERSONAL MESSAGES FOR FREQUENT CALLERS

"Hella, I'm not avai ... [1] ... Tess! Sweetheart! I'm in the car, picking up you flowers. My car phone number is 993-1234 if you need me. Otherwise, see you at seven. Kiss-kiss-kiss!"

MESSAGE FORWARDING

"Hello. This is your answering machine calling Three new messages. Message ane was received at 3:52PM



MULTIPLE VOICE MAIL BOXES

"Hi. This is the operating systems group We're out to lunch, but you can leave a private message by dialing 11 for Chip, 12 for Morris, 13 far Joel and 14 for Bob. Or you can wait for the tone to leave o message for our secretary."

INCREASED SECRETARIAL PRODUCTIVITY

"This is Gardie's voice mailbox. Please wait for the tone and leave a messone. My computer knows where I am at all times and will call me immediately with your message. If you need to speak to someone right away, touch zero to transfer to my secretary."

DON'T FORGET MOM!

This is Chip. Please Hi, Mom. I've been waiting for your call. How's Europe? Thanks for remembering my birthday. Sorry I missed you, but I had to run some errands. See you Thursday at the airport."

OUTGOING MESSAGES

"This is Joel's computer calling. Just a reminder for Lynne and Bonnie - We have o budget review tomorrow morning at 8:00 o'clock. See you there."

nswering machines are irritating because they are so dumb. Even the best of them. For only \$349. we'll give you personal voice mail for your PC, and turn it into the world's smartest answering machine. All without disturbing whatever else you've been doing on the PC.

How smart is "smartest?" The examples above . . . uh . . . speak for themselves. Sure, your PC can answer the phone in your voice, and let you retrieve messages remotely from any touch-tone phone. And it can call you to deliver your messages.

But give your friends and associates their own voice mailboxes. The ability to interrupt your greeting and start recording immediately. To deliver messages to each other as well as to you. The ability to transfer to other extensions. Even let them change their minds and their messages. Give them

all this and you'll never again have to apologize for making people talk to a machine.

In your business, it will relieve your secretary of the burden of taking routine messages. And relieve you of the burden of transposed telephone numbers. In business or in personal use, it works 24 hours a day. Without irritating your callers like mere answering machines do. All while you're running your spreadsheet, word processor or just about anything else.

We call the world's smartest answering machine "CAM." For Complete Answering Machine. We call ourselves The Complete PC. And CAM is just the beginning of a whole line of smart products designed to help you get more from your personal computer,

You should call (800) 634-5558 today for the name of the CAM dealer nearest you

So tomorrow, you can give your old answering machine to someone who doesn't mind annoying people.

THECOMPLETERC More from your personal computer

521 Cottonwood Drive . Milpitas, California 95035 800 634-5558 • 408 434-0145 • FAX 408 434-1048

CIRCLE UD ON READER SERVICE CARD.

INSIDE TRACK

Atlanta Comdex steps on some toes, but sheds light on some previously hidden beauties.

The Interface group and its Spring Comdex will be back in Atlanta next year. That was the good news for this illtimed show. I say ill-timed because its dates were changed to compete with the faltering National Computer Conference (NCC), but instead it stepped on the show dates for that giant beast of a show-CES, the Consumer Electronics Show. This annoved a few exhibitors who noted that CES always gets top priority with news organizations for national coverage. CES didn't like the coincidence one bit, either. In fact, it was national marketing wiz David Birch-Jones of Onkyo (he coincidentally follows the computer scene) who made the CES officials aware of the simultaneous show dates, and CES, at least, moved its show ahead 2 days to awk wardly start on a Saturday. Maybe these guys should have a talk next time. Neither group wants the shows to conflict.

Be that as it may, I like this Comdex, While it's the perfect time for a trade show, it seems unlikely that this show will unseat the primary microcomputer show for the trade, November's glitzy Las Vegas-based Fall Comdex—a Flying Dutchman of a show that exhibits products for no particular buying season and long after the Christmas purchasing period is kaput. Traditions de hard.

As usual at a Comdex, the big news was in the back rooms and out the side doors. Here are a few goodles I gleaned from searching for that jujey tidbit.

First of all, I stumbled into Doc and Mary of Rix Software, who invited me to what turned out to be a ritotus private dinner with some top U.S. and Japanese executives from Sony (no baloney) Corp. It seems that Sony is going to take another serious run at the American microcomputer arena. Its past efforts have failed miserably. This time the company promises that it will become a dominant force in the peripherals market.

Sony will start with some impressive high-resolution Trinitron monitors. These monitors are nothing less than fantastic. Look for Apple's Mac II, Next Computers, and possibly Sun Microsystens to use them as the standard farens to use them as the standard farens to use them as considered to be the "im" monitor for the PC user in the know. Sony intends to sell branded lines of disk drives, too. It invented and patented the 34-sinch drive, yet never marketed a branded version.

So expect to see the Sony name more frequently than before. When the company gets rolling it will probably try its hand at a computer—again. It will be interesting to see what it does wrong this time around. Anyway, keep an eye on Sony.

While on the subject of graphics, keep an eye on Number Ninc Computer Corp. Named after a Beatles dity, ("Number nine, number nine..."), this company has the inside track on high-performance graphics cauds. The cards aren't cleap at \$1.495 and up, but what they do has to be seen to be believed, If I was an earnest user of Auto-CAD, still the definitive Pc-based CAD software, I'd look seriously at the Num-

ber Nine cards.
The trick used by these guys is simple.
While dozens of pundlis grind their jaws
and wring their hands during arguments
over the relative merits of the TI 34010
32-bit graphics microprocessor and the
Intel 82786 graphics controller, Number
Nine has designed a line of cards that use
both chips together! To add further value, it developed an operating system

called NNIOS to talk to the chips and take and send messages to, say, DOS or whatever, Hot, hot, bot.

whatever, 10K, 10K, 10K.
Even in CAS-Oscilation be mode, the
Even in CAS-Oscilation to 16 by
19 does, making CGA graphics look are
toolshing. The Pepper 1600 cand has a
16-by 38-pixel cell array with a 1600-by
200 pixel nominerateed viewable resolution. Stumming color stuff. There's not
comply room in this column to praise the
performance of these designs. Try callng or writing the company ASAF. Numgen withing the company ASAF. Numgen withing the company ASAF. NumAvex., Cambridge, MA 02138; (617)
Avex., Cambridge, MA 02138; (617)
Avex. Cambridge, MA 02138; (617)
Avex. Graphic and from these guys before
year-end.

Finally, the most mind-boggling thing I saw at the show, though, was the incredible, and as yet to be released, Publisher's Type Foundry, from Atlantabased Z-Soft. This is a font lover's dream come true, and Z-Soft hasn't the foggiest notion what to do with it. Sell it cheap? Sell it to the highest bidder? Nobody knows. Developed in-house for inhouse management of the type library, the product was too good for Z-Soft to keep to itself. Simply put, it will scan in a typeface or take a bit-mapped face or take a PostScript outline and allow you to infinitely edit the faces in ways that will make your heart stop. Then it will create a bit-mapped face or a genuine Post-Script file.

I can't stress enough that this inreculible tool is not just a hokey from teditor. It's unbelievable, what it does. I just hope they don't overprice it. My recommendation to the company was to blow it out at \$149 and let it also the world by hoy a typerface if you owned this packge. They expect someone to sue them because it's a tool that could be used to infringe someon's copyright. What a world. Lexpect it to sell for around \$4540. Worth every penny.

PEDERAL RESERVE NOTE. **OUR EVERYDAY LOW PRICES** Lotus 1-2-3 . . *309 Zenith Z-181

Laptop .. \$1519

Word Perfect . \$195 Multisync . \$549



YOUR MONEYSWORTH GUARANTEE

- Credit cards not charged until after your order has been

- supped surped same day on all stocked products (on orders placed by 2pm EST)

 All products guaranteed to be the latest versions avails
 Only factory sealed and fully warranteed products sto
 Never a surcharge for American Express, Visa or

SON DOLLAR

GRAPHICS/CAD-CAM	
Auto Sketch	\$59
Chartmaster	189
Drafix Plus	185
Freelance Plus	299
Harvard Presentation	209

			۰	۰	۰	۰		۰	в	۰	r	٠	1	r	٠			
LANGUA	GE	s	_									_				_	_	
Microsoft																		
Microsoft	Col	ы	oi												ĺ.	3	85	
Microsoft	For	tı	a	n	١.	ı				ı,						2	49	
Microsoft	Ma	CI	ro	i.	A	8	8	e	n	ú)	e	r	ï	ï		85	
Microsoft	Qu	ic	k	1	3	8	8	ic									55	
Turbo Bas	ic.	Ĵ		ľ				i	ĺ	i	i	Ċ	i	i	i	i	55	
Turbo C .																		
Burbo Pae	col		•	1		٠								٦	1		55	

ROJECT MANAGEMENT	
arvard Total	\$325
crosoft Project	.219
per Project Plus	285

FINANCIAL/ACCOUNTING

BPI Entry													
Computer													
Managing	¥	b	u	r	R	A)	ne	ŋ	1.	 		 . 105

UTILITIES Carbon Copy Plua \$105

PC DOS Low Price Calli SPREADSHEET/INTEGRATED

	able	5
1	mework 2	9
	L	
	tus 1-2-3 30	5
	tua Metro	5
- (tua Report Writer 6	5
	nart Integrated 39	9
	percaic IV 26	9
	mphony 43	

WE CARRY ALL AVAILABLE 31/2" FORMATS.

DATABASE MGMT	ZENITH	PRINTERS
Clipper\$349	Laptop Modem 255	DICONIX
dBase III Plus		Diconix 150 \$30
Foxbase +	0040000	EPSON
Genifer	GRAPHICS	FX 86 E
PFS Professional File 129	ATI	FX 286 E
Q & A	EGA Wonderboard \$259	EX 800
R:Base System V 339	HERCULES	EX 1000
Reflex 79	Color Card 145	LQ 800
	Graphic Card Plus 175	LQ 1000 61
WORD PROCESSING	In Color Card 295	LQ 2500
	NEC	HEWLETT-PACKARD
Diaplay Write IV \$285	GB 1 (EGA)	Series II 1,77
Harvard Pro Publisher 379	PARADISE Auto Switch EGA 195	NEC
Lotua Manuscript 319		P-660 42
Microsoft Word 3199	QUADRAM	P-760 62
Multimate Advantage II 255	EGA Plus 279	OKIDATA
Page Maker 469	Pro Sync EGA 299	M 192
PFS Professional Write 105 Ventura Publisher 499	VIDEO 7	M 193
Word Perfect	VEGA Deluxe319	M 29366
Wordstar 2000 Plus		TOSHIRA
Wordstar Professional (Ver. 4) . 225	MULTI-FUNCTION BOARDS	P 351
XY Write III		P 321 St. 50
AT WILE III	AST	
	Six Pack + 384K \$189	
LAPTOPS	Six Pack Premium W/512k 169	MOUSE INPUT DEVICES
Toshiba T1100 Pius \$1.485	Advantage 128K	MICROSOFT
Zenith Z181 1,519	Rampage W/256265	Mouse (Serial) \$11
		Mouse (Buss.) 10
	CPI Half Pint I/O	IMSI
SURGE PROTECTORS		PC Mouse
KENSINGTON MICROWARE	INTEL	MOUNTAIN
Maaterpiece Plua\$89	Above Boards Low Price Call!	Hard Drive Card 30MB 54
	Inboard 386's Low Price Calli	Third Diffe Guid Gomb ! ! ! ! ! ! ! !
BACK UP POWER SUPPLIES	Math Co-processors Call!	
		HARD DISKS
DATASHIELD	MONITORS	PLUS
300 WT (XT) \$300	AMDEK	Hard Card 20 Mb \$66
800 WT (AT)389	410 A	Hard Card 40 Mb 89
	Color 600-S	
MODEMS	Color 722	
	NFC	BACK UP STORAGE DEVICES
HAYES		IOMEGA
Smartmodem 1200 \$285	Multi-Sync 549	Bernoulli (10 + 10) \$1,34
Smartmodem 1200B 285	PRINCETON	Bernoulli (20 + 20) 1,75
Smartmodem 2400 429	Amber Max-12139	Bernoulli 10 MG
Smartmodem 2400B 429	RGB HX-12 409	Cartridge Tri-Pak 14
TOSHIBA	RGB HX-12E 495	Bernoulli 20 MG
1200B Laptop Modem 265	RGB SR-12 535	Cartridge Tri-Pak
All prices and policies subje	ct to change without notice	



The New CalComp DrawingBoard.

Draw Your Own Conclusions.

-



 Flexibility. Quick menu picking. Also high resolution tracing and drawing. And selectable resolutions of up to 1,016 lines per inch.

 Features users want most, Sleek, rugged, wedge shape. Convenient built-in stylus holder. Adjustable plane positions. Power-on indicator.

We draw on your magination and DrawingBoard are trademarks of Californa Mirage and Automn are trademarks of Zerographics Auto-CAD is a trademark of Auto-Newk Vernal AD is a trademark of Vernal AD Corporation © 1997 Californa Removable template overlay holder.
4 or 16 button cursor option. Color
matched to most PCs and workstations.
3. <u>CalCompatibility</u>. Supports over 50
major CAD and graphics software packages.
AutoCAD, VersatCAD, Zenographics Mirage
and Autumn. Just to name a few.
4. <u>Built-in reliability</u>. CalComps advanced

technology reduces the number of electrical components.

5. Warranty commitment, We back our proving Roard with a special five year.

DrawingBoard with a special five year warranty, too.

With DrawingBoard you get a complete

digitizing system, including stylus, power supply, and cable. Combine all this with a retail price of \$595. And there's only one conclusion you can draw on. CalComp's new DrawingBoard.

Call us at 1-800-CALCOMP. Or write us at CalComp, P.O. Box 3250, Anaheim, CA 92803.

We draw on your imagination.™

A Lockheed Compan

A Lockheed Compar



"Compared to a disk drive, BATRAM's speed is phenomenal." William Wong, PC Labs

The results are in. BATRAM outperforms disk drives! And now, with exclusive software, BATRAM also performs as an EMS device!

This ultra-high performance IBM PC/XT/AT compatible mass storage device combines the speed of RAM, the safety of long term battery backup, and the security of sophisticated ECC (Error Correction Coding) to give you extremely fast, safe, and reliable storage.

RATRAM IS 700% FASTER THAN A DISK DRIVE.

Your applications like spreadsheets, data base management, CAD/CAM and local area networks, which are all disk intensive, benefit from

BATRAM's phenomenal speed. BATRAM SUPPORTS EMS

The design qualities that make BATRAM such an outstanding DOS device also make it an innovative EMS (Expanded Memory Specification) device. Popular programs which support the Lotus/Intel/ Microsoft Expanded Memory Standard can access BATRAM just as though they were accessing internal memory expansion boards, at a cost

IBN PC/XT/AT are trademarks of International Business Machines Inc. Lotus/Intel/Microsoft are trademarks of their respective companies.

savings and a capability increase! EXCLUSIVE EMS SOFTWARE

Santa Clara Systems' exclusive EMS software gives you the ability to partition BATRAM's memory for each workstation on the network, instead of purchasing an expensive EMS board for each computer.

BATRAM ADDS ERROR CORRECTION CODING

BATRAM only occupies one expansion slot, versus up to 4 for competing memory boards. And no other EMS/RAM board offers the important ECC security that BATRAM offers, making BATRAM the Ideal FMS unit!

BATTERIES PROTECT RAM MEMORY

Power interruptions don't phase BATRAM, Your important data is protected by BATRAM's innovative two week battery backup. These batteries are continually charged, delivering full power so your data is always safe. You can even unplug BATRAM without losing data for up to two weeks. BATRAM's ECC is further assurance of your datas integrity.

BATRAM IS TOUGH

BATRAM'S rugged shock-mounted, no-movingparts construction is built for use and abuse in tough environments, it is totally unaffected by the shake, rattle, and roll that render disks

BATRAM: THE FIRST NO-WORRY MEMORY

Call us now for the whole story on the industry's fastest, safest, and most reliable storage device: BATRAM, the no-worry memory. Dealer inquiries welcome. Call (408) 729-6700 today.



A Novell Company 16i0 Berryessa Rd., San Jose, CA 95133 (406) 729-6700 / FAX (406) 259-0778 / TLX 176309 SCS SNI



Letter-Perfect.

hen it comes to the everyday realities of laser printer output, we feel there's more than one way to see perfection.

That's why we introduced two models of our LIPS 10 PLUS laser image printing system. Each with very distinct purposes in life.

There's our letterperfect 512K model, that page-after-page, day-after-day prints the letters and correspondence, reports and presentations which are the backbone of your business. A backbone meant for a long life: 600,000 pages at a workaholi rate of 15,000 pages



pages at a workaholic rate of 15,000 pages per month. We also know that

with perfection comes increased needs. Like adding charts to your reports or graphics to your presentations. Or barcoding your inventory.



Picture-Perfect.

That's a different kind of perfection. A different story. The one told by our LIPS 10 PLUS picture-perfect 2.0MB model. Where you can have a picture on every page.

The LIPS 10 PLUS printers are also perfect company. That's because they're completely compatible with Hewlett-Packard's LaserJet Plus as well as Diablo daisy wheel and Epson dot matrix printers. So you can run the most popular business and business graphics software.

Perfection also means extras. Like the built-in LIPS Command Language and CIEFLEX fonts for simplified forms generation, special characters, fonts and bar codes. This plus the LIPS font cartridges give you

the answer to low-cost desktop publishing - today. On top of it all is a smart Englishlanguage front panel that changes compatibility and print attributes in a snap.

The LIPS 10 PLUS laser printers. The perfect solution for more than one kind of perfection.

For even more perfect information, contact CIE Terminals, a C.Itoh Company, 2505 McCabe Way, Irvine, CA 92714; or call (714) 660-1421 or our

toll-free number (800) 624-2516.

CIE Terminals, Inc., 2505 McCabe Way, Irvine, CA 92714 Telephone: (714) 660-1421 (800) 624-2516 e 1987 CIE Terminals, Inc.



Imagine the speed and power of a \$100,000 minicomputer in a desktop PC cost ing under \$7,000. Now imagine all that power g to waste because the operating system you chose was never meant to take advan tage of a computer this powerful. It wil ke more than just a "window environ ment" or an outdated operating system to unlock the 80386.

It will take PC-MOS/386."

The First 80386 Operating
System. Specifically designed for the
80386 computer, PC-MOS/386" opens
down Down to worst representations. doors. Doors to more memory and lti-tasking. Doors to thousands of DOS programs as well as upcoming 80386-specific software. It's the gateway to the latest technology..., and

your networking future.

Memory Management
Without Boards. PC-MOS exploits the memory management capabilities built into the 80386. So, up to four GIGABYTES of memory are access-ible to multiple users and to future 80386-specific applications requiring megabytes of memory.

Multi-Tasking, MultiUser Support for One, Five or

25 Users. PC·MOS/386™ allows up to 25 inexpensive terminals to be driven by a single 80386 machine. So the features of the 80386 can be utilized at every terminal. And it comes in three versions so you can upgrade your system as your com-pany grows...without having to n new commands or install

MADE FOR THE 80386.

CPS-MOSINS

RUNS DOS PROGRAMS

MULTI-TASKING

with our systen

DIR and COPY-so you'll feel comfortable The Gateway to Endless Features. Distinctive characteristics

Software Support for Thousands of DOS Programs. Although PC-MOS/386⁷¹ totally replaces DOS, it doesn't make you

replace your favorite DOS programs. So you can run programs like Lotus 1:2-3, WordStar, dBASE III, and WordPerfect on the 80386.

Best of all, it uses familiar commands like

like file/system security, remote access, file/record locking, and built-in color graphics support for EACH user set PC-MOS/386rd apart from all previous operating systems

Open the Doors to Your Future TODAY! Call The Software Link TODAY for more information and the authorized dealer nearest you. -MOS/386[™] comes in single, five & 25-user versions starting at \$195

ILAR OPERATING SYSTEM THE SOFTWARE LI

rkway Lane, Atlanta, GA 300 Telex 4996147 SWLINK FAX 404/263-6474

CALL: 800/451-LINK In Georgia: 404/448-LINK

OEM/Int'l Sales: 404/263-1006 Resellers/VARs: 404/448-5465

д этэ мэгэ мелмен эндүүнд UARD rie of The Software Link, PC-MOS/38C MultiLapt *Advanced, and LANLink ** are trademarks of The Software Link, ment Corn, MicroPon, Addon Tate, & WootPerfect Corn, respectively, Processo I technical provides are undoor to change TRADEMARK ACKNOWLEDGEMENTS: MultiLink* is a regulator 12-3. WordStar, dBASE III. & WordPerfect are trademarks of

SOFTWARE SELLS HARDWARE . . .



Old truisms never die. They just keep coming back to haunt those who didn't understand the first time. PC vendors seem especially dense this year.

There is no cliché—I should say, no truism—more often repeated in the personal computer business than:

Software sells hardware, not the other way around.

Why, then, do vendors keep forgetting that?

Anyone who thinks software is incidentally 's ½-inch tape backup systems. Since most all the vendors of full-size DC600 tape units use drive mechanisms from Archive or Wangtek, these tape backup units must all be pretty much alike, buth?

Not a chance. Speed, convenience, and reliability vary tremendously—as a function of the software provided with the units by the companies that repackage the Archive and Wangtek drives. Get a backup unit with lousy software and, I promise you, you'll come to appreciate the difference good software makes.

Software sells hardware. . . . It's the same story in PC-fax units. Here the add-in fax boards vary all over the lot, instead of coming from just one or two OEMs, but the key is still software. I haven't seen a PC-fax unit yet with anything approaching tightly integrated software.

We should be able to pick functions from a single menu. Those functions should include automatic read-in of impages from scanners and of ext files, for sending. They should include similarly automatic saving to disk and printing of linconing text and pure graphics—converted precisely, of course, from Group III fax's maximum 200 by 200 dots per finch to the 300 by 300 disk per finch to the sending the sending for a baser printer, or to the

very good but demanding high-resolution output possible from modern dot matrix printers, such as Epson LQs and the NEC

I have high hopes—I've seen some very promising alpha software knocking around in the shops of still-unannounced vendors about to jump into the IC-fax market—but why have the first half-dozen or so fax card vendors come to market with such inadequates software? Could that lousy software have anything to do with the fact that fax cards aren't exactly burning up the market?

Software settls hardware... The

classic case of hardware getting ahead of software has been the IBM PC AT, of course. It's been a long, long time since August 1984, when IBM rolled out the AT. Surely a "286 DOS" was coming soon? Surely a chip that could address 16 megabytes of RAM wouldn't be expected to limp along in its perversely misnamed

"real" mode, aping an 8088, for more than a few months?

Surely...hah. Certainly the AT has sold well—loss of us needed rue turbo PCs—and now even 386s are selling, when vendors can find chips to put in them. But imagine how much better 286 boxes might have sold—and how much ruther along the line w'd be towards an AT world—if w'd had software more closely attuned to the capabilities of the hardware.

Software sells hardware... Now come the vaunted IBM PS/2s. Nice machines, to be sure; I bought one myself. Cute, fairly small, nice graphics, easy to tear down, and easy to fix. But ... ummmm ... just what is it you can do on a PS/2 that you can't do on, say, a nice

ummmm...just what is it you can do on a PS/2 that you can't do on, say, a nice \$1,500 AT clone? (Want to try another category—maybe, pop music of the sixties?)

Because the reality, of course, is that while PS/2s are selling OK—that cockeyed logo really draws crowds—there's absolutely no compelling reason to buy a PS/2 today. And there won't be, until we see some killer applications on the PS/2s, running under OS/2, Version 1.1, which is something like a year away.

Anyone who thinks PS/2 sales are going to soar before we have those software incentives is goofy. PC users, micro managers, and DP managers are smarter than that. We'll see multithousand-unit diskless Model 30 sales from time to time—after all, a diskless Model 30 is a perfectly nice terminal. But the Model 30 is no more a

PS/2 than I'm an elf; it's a stylish PC-XT, a



■ JIM SEYMOUR

nice machine for about 1985. Sales of the real PS/2s-the Models 50, 60, 80, and, ves, 70-aren't going to take off until we have real incentives-spelled S-O-F-T-W-A-R-E-to buy 'em.

Why, one wonders, does it take so long to learn that software is what sells hardware? And why do we keep trying to produce software with the same kinds of industrial

management tools and techniques we use for hardware (and for thousands of other industrial-society goods), when it clearly

From Ryan-McFarland:

COBOL's **DOUBLE STANDARD**



I f you want goughe or iscurring.

RM/COBOL-85 rolls both the 74 and 85 standards into a single compiler. It can compile your present applications without change, do it twice as speedily, store data in as little as a fifth the space, and run those programs up to eight times faster than with earlier RM COBOL's

So don't let conversion from the 74 to the 85 standard ruin your '87! In a single stroke you could move all development work to PC's, if not there already, and be up and running right away. No conversion downtime.

When ready for the 85 extensions, just set a command line option switch and add new features to your programs to give them the structure and performance the 85 standard adds to the language. You also get useful 74 features such as Sort-Merge and String-Unstrang. The one compiler is GSAcertified error-free for both standards!

RM/COBOL-85 is designed for machine-independence. Develop on your PC with the confidence that your

XENIX and UNIX worlds. Moreover. the RM/COBOL family expands to IBM's PC Network™ and Token Ring. 3Com's 3Plus™, and multi-user setups under UNIXTM and XENIXTM Ryan-McFarland COBOL's have been in use since 1976 on over 500,000 installations. This is software

from professionals. RM/COBOL-85 Ongunal RM/COBOL

for UNIX or XENIX

Call Us at ...

800 PC-BRAND That's (800) 722-7263

In NY State call (212) 242-3600 PC Brand, 150 5th Ave. New York, N.Y. 10011-4311 Telex 657962 (SOFT COMM NYK) Prices, terms, and specifications subject to change without notice (0.1987 PC BRAND

CIRCLE 299 ON READER SERVICE CARD

doesn't work? More than a decade after The Mythical Man-Month devastated the idea that you could build software faster by adding more people to the team, with development time locked into an inverse relationship with the number of warm bodies writing code-the more of the latter, the less of the former-we still see wildly unrealistic deadlines for software development projects: programmers thrown like darts at overdue projects; products late by not just months but years . . . and too often, very nice hardware products, such as the PS/2s.

stranded on the runway for lack of fuel. At Spring Comdex in Atlanta in early

 Anyone who thinks PS/2 sales are going to soar before we have software incentives is goofy. PC users

and DP managers are smarter than that.

June, a kind of keep-your-clothes-on sauna for the masses, there were lots of new hardware products but precious little interesting software. Ize, a promising new kind of free-text searcher, was being shown in a hotel suite, and a very few new and marginally interesting programs made it to the

Comdex is a reasonably effective predictor of the next year in the PC business, so we're still stuck in the hardware part of

I really don't care what sells hardware. But I care very much about what's coming in software, because software adds the intelligence in a computer. And our computers, while getting impressively musclebound over the last few years, are still mighty shy on smarts.

AW . . .

WHAT THE HECK!

dicular

ProDesign II - Still \$299!

ProDesign II — the Easy-to-Use CAD System. The CAD system that was introduced two years ago for the amazingly low pince of \$299. The CAD system that has undergone four major revisions with more than 400 enhancements. The CAD system that still costs only \$2991

How do we do it? Our accountants said to raise the price to cover research and development costs. Our business advisors said to charge more for the additional features. Our competitors said it's impossible to stay in business selling a comprehensive CAD package such as Probesign II for only

5299.

And our customers said \$299 is great. So, we said.

"Aw... What the Heck! \$299 it is!"

Now, two years after its introduction, ProDesign II is one of the world's leading CAD packages. It has features previously found only on CAD systems costing thousands of

- dollars. For the single price of \$299, you get these features and more:

 Support for more than 180 printers (including color
- printers)

 Support for more than 80 plotters, with plotter optimination
- zation.

 Easy-to-Use single keystroke commands.

- On-screen menus accessible with a mouse.
- Comprehensive drawing commands, including the finest curve fitting in the industry.
- Editing features unsurpassed by ANY other CAD package.
 Extensive snap features, including snap to point, endpoint, midpoint, line, circle, ellipse, arc, intersection, and perpen-
- True Auto Dimensioning with several formats.
- Extensive Layering features.
- Full Macro capabilities.
- Specialized drawing aids, such as tangents to circles and ellipses, parallel lines, parallel curves, wide lines, and more.
- Complete hatching with up to 40 different patterns.
- Area and length calculation for line curves, circles, etc.
- Full Zoom, Pan, and Rotate capabilities.
 Capability to transfer drawings to and from other programs.
- Capability to Break/Trim Lines, Curves, Circles, Arcs, and Ellinses.
- Many more features All for only \$299!

 Where do you get ProDesign II? See your local computer.

Where do you get ProDesign II? See your local computer dealer, or contact: American Small Business Computers, Inc.

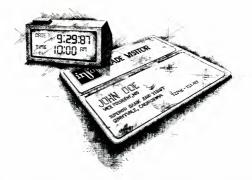
118 South Mill Street Pryor, OK 74361 (918) 825-4844

Telex 9102400302

Want more information? Call or write for a detailed brochure and a free demo disk! CIRCLE 475 ON READER SERVICE CARD

PRODESIGN II STILL ONLY \$299!





INFORMATION INTENSIVE.

FOR THE MIS/DP PROFESSIONAL: THE MOST TECHNICAL INFORMATION IN THE LEAST AMOUNT OF TIME.

When it comes to comparing major systems and products — and making the right buying decisions, it's an ongoing challenge to stay abreast of the latest changes... which is why INFO is so crucially

important for MIS/DP professionals.

Only with your INFO badge do you gain access to the one even that delivers all of the latest advances in information management systems. Only with your INFO badge can you find what you need to know in one place, at one time.

Micros. Minis. Mainframes. Multi-faceted peripherals. Telecommunications equipment. Feature-filled software packages. The newest, most powerful systems on the market. Plus, all the prod-



te 14th International
formation Management
toposition & Conference
prember 29-October 2, 1987
tob K. Javits Convention Center

ucts and the information to pull them all together.

If it's important, you'll find it at INFO leading-edge technology from the industry's foremost manufacturers and suppliers. You'll come face to face with the leaders in the field. Technical specialists who speak your language and can provide you with the solutions you're after.

If you're part of an information intensive business, make it your business to come to INFO. It's the one information management show you simply can't afford to overlook.

Invest four days at INFO...get a year's worth of technical solutions.

CLIP THIS AD AND BRING IT TO THE SHOW FOR A \$15 DISCOUNT

Just pick up a registration form at the Javits Center, fill it out and proceed to a cashier with this ad. You'll save \$15 off the regular \$20 admission (ee.

Show Dates: September 29-October 2, 1987

Show Hours: 10am-5pm

Registration opens at 7:30am. No one under 18 admitted. For more information, call (203) 964-8287, 9-5 EDT.

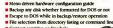
Automatic Backup Protection



... From Top-Notch Everex SCHEDULER™ Automatic SchedulerTM for unattended backups ■ Tape sequence management recorded on the tape

- File restore from image backup or file backup
- Backup across networks (using logical image or file-by-file)
- Physical image backup/restore of local disks Logical image backup/restore of local or remote disks
- File backup from any local or remote disk of any file size
- File-by-file and image backup on the same tape
- Multiple tapes to support unlimited backup capacity
- Multiple datasets for multiple backups on the same tape





- Context sensitive on-line help
- Dynamic display of tape status
- Multiple windows (nestable and movable











Utilize the features. Compare the performance. Count on our commitm to Excellence. Enjoy the Everex Protection TODAY

dealer or more information, call us. We're EVER for EXcellence TH

1-800-821-0806

1-800-821-0807

48431 Milmont Drive, Premont, CA 94538





Add the Reader,

Having an office system capable of reading text, graphics and photographs is no longer a luxury. It's a necessity.

The addition of the Reader to your present system will withully eliminate the need to retype or recreate documents and images. The Reader can scan continuous tone images, such as photographs, by converting them to 128 shades of grey and transfer them to your system. Imagine multiplying your graphic scanning ability to a point where you can reproduce photos or graphic is wivid detail. The applications are countless. And with the Reader's 30 page acposity it on feed un to 4 pages of text

a minute. Accurately and automatically.

Standard features allow you to read pages directly into word processing programs such as Wordstaff 2000, Multimate ", XyWitte" III, Word Perfect", DisplayWrite" III and Microsoft Word, Features for fling and editing are provided in an easy to use format. The Reader also offers a multitude of interfaces to the most popular page make-up and graphic editing programs available. Unique software architecture permits the addition of new hypostyles and features to your system without the worny of hardware obsolescence or costly upgradus.





subtract the work.

Consider the possibilities. Words and pictures reproduced into a polished, professional appearance you never dreamed affordable. And with the quality and versatility inherent to this convenient desktop unit, no office system is complete without the Reader. So total up the time and effort you spend at your system, then add the Reader and subtract the work.

TOC NTELLIGENT OPTICS CORPORATION

	sted in the IOC Reader. Please send me	
Name		
Address		
City	State Zip	
Phone		
Mail to ar call: Intelligent Optics C P.O. Box 712, Clint	orporation, 4 Heritage Park Road en, CT 06413	

FOR THE BEST BUYS, CALL US ANYTIME.

Software			Statistica			Hardware*	_	_	Monitore	
		_	SPSS/PC +		699	Computers			Amdek 310A	\$ 149 \$ 169
Word Procsseing/			Statgrephics		419	AST Premium 286	\$ 0	iles	Amdek 410A	
Dasktop Publishing			Systet	\$	439	Wyse 286 PC		Cell	Amdek 1280	\$ 779 \$ 579
Fency Font	\$ 1	39	Graphics			Penasonic Business	-		NEC MultiSync	\$ 439
Microsoft			Chertmoster		209	Partner	8.0	Cell	Princeton HX-12	\$ 439
Word 3.1	\$ 2	09	Diagreph		279	Toshiba 3100/1100 +		ali	Princeton MAX-12E	\$ 149
Multimate			Diagram Mester		189	Multifunction Boards	-		Printere/Plotters	
Advantage-II	\$ 2	59 159	Freelence Plus		349				Epson EX-1000	\$ 549
Lotus Manuscript	\$ 3		Grephwriter Combo		349	AST Advantege		319	Epson FX-86E	\$ 359
Office Writer /Speller		99	Hervard Presentation	٠	040	(126K) AST Advantage		319	Epson FX-286E	\$ 499
Pegemaker PFS: Prof Write	\$ 1		Grephics		249	Premium		419	Epson LQ-1000	\$ 569
Ventura Publisher	\$ 5		MapMester	š	219	AST 8 Pak Plus (64K)		119	HP 7475A	\$1499
	\$ 1		MS Chert		189	AST I/O Mini II		119	HP Laseriet II	\$1825
Volkswriter 3 Word Perfect 4.2		95	PC Peintbrush Plus		109	AST Premium (256K)		219	NEC 3550	\$ 789
	• •	50	Picture Perfect		209	AST Rempage PC		279	Okidete 192 +	\$ 379
Word Perfect Server	\$ 3	109	Prodesign II		159	AST Rempage 286		399	Okidete 193 +	\$ 549
Word Perfect		,,,,	Publishere Peintbrush	š	219	Inboard 386AT		350	Okideta 292	\$ 539
Station	s	75	Signmaster	š	139	Intel AboveBoard		Call	Okideta 293	\$ 689
Wordstar Pro 4.0		249	Desktop Environments			Orchid Jet 386		949	Toshibe P321	\$ 549
Wordstar Pro 4.0		289		s	85	PC Turbo 288 (1MB)		749	Toshiba P341 E	\$ 769
Xywrite III		199	Lotus Metro	ŝ		PC Tiny Turbo 266		449	Toshiba P351	
Xywrite III +		249	MS Windows	Š		QuedBoard (0K)		109	Model 2	\$ 999
			Sideklck	,	5 59		•	.00	Mass Storags/Backup	
Detabase Systems			Project Management			Dieplay Boards			IOmege 20 + 20	
Clipper		389	Hervard Total			ATI EGA Wonder +	\$	239	W/Intfc	\$1949
DBase III Plus		399	Project Manager II		369	Hercules Graphics				S Cal
DBase III Lan Pak		599	Microsoft Project		249	Cerd Plus		189	Irwin Tape Drives	\$ 67
Foxbese +		229	Superproject Plus		\$ 299	Hercules Color Cerd	\$	159	Plus HerdCerd 20MB Plus HerdCerd 40	\$ 949
Paradox 2		429	Timeline 2.0	\$	\$ 259	Hercules			Priam 42MB AT	\$ 79
PFS: Prof File		145	Languages/Utilitles			In-Color Cerd		309	Priam 60MB AT	\$ 89
Q&A		219 449	Festbeck		69	NECGB1	\$	359	Seegete ST 225 W/Int	
R Bese System V		239	Lattice C	s		Peredise Auto			Seagate ST238 W/Int	\$ 38
RapidFile		89			\$ 89	Switch EGA 480	\$	399	Tellorass	\$ Ca
Reflex	\$	89	Norton Advenced Microsoft C		\$ 279	Qued EGA Prosync		339	Tecmar QT60 Int	\$ 89
Spreadcheete/			Mace Utilities		\$ 65	Quadram EGA+		269	recinal Croomit	. 00
Integrated Packages			MS Fortran 4.0		\$ 279	Tseng EVA 480	\$	389	Natworks	
Eneble 2.0		389	Quick Besic		\$ 69	Modeme			ArcNet	\$ CAL
Framework II		399	Turbo Basic		\$ 59	Heyes 1200	\$	299	Novell	\$ CAL
Jevelin +		Call	Turbo Basic		s 59	Hayes 1200B	š	299		
Lotus 1-2-3		309	Turbo Pascal		\$ 69	Hayes 2400	š	499	Input Devices	
Lotus Hel		109	Turbo Pascar	•		Heyes 2400B	š	449	Keytronics 5151	\$ 18
Multiplen		125	Productivity Toole			Migent Pocket	š	159	Keytronics 101	\$ 11
Smert System		429	VP Expert		\$ 59	US Robotics 1200	Š	139	Microsoft Mouse	\$ 12
SuperCelc 4		279	Eureka		\$ 89	US Robotics 1200B	š	109	PC Mouse/Dr Halo II	\$ 10
Symphony	\$	449	Sideweys		\$ 39	US Robotics 2400B	\$	189	Accessories	
			Accounting			Ventel 2400	\$	409		S 5
Communications		119	BPI		s 179	Ventel 2400B	s	409		\$ 8
Cerbon Copy +		99	Great Plains		\$ 499	Watson	\$	339	Logical Connection	\$ 32
Crosstalk XVI		129	Eesy Business		\$ 359				Mesterplece Plus	\$ 12
Crosstalk Mark IV		159			-	Emulation Boards		629		\$ 28
Relay Gold		Cell	QUALIFIED INSTAL	LE	ERS	AST 5211-11 + Irma/2		725		\$ 18
Smerterm (Persoft)	• • •	Cell	AVAILABLE			minera	•	, 20	oozo, motii onip	

In New York State call (718) 438-6057

EX: 627-30170 or 910-240-3918 CIRCLE 101 ON READER SERVICE CARD

\$ 189

Prices subject to change; call for latest prices

THE TRADE SHOW: GRAB FOR CASH



What do Sgt. Pepper, a basketball player named "Spud," tiny stuffed pandas, imprinted yo-yos, and Philippe Kahn's saxophone have in common?

Boy, does my head burt. And my left and right insteps. And . . last thing I remember is John Dvorak saying "fine body" and "cute nose" as a bartender poured a glass of Mercuro-chrome-colored wine from a screw-top bottle. I vaguely recall making a rude noise, and then somehody . . uh . . turned off the juice to my headbone's dynamic RAM.

Sore head, sore feet trade show time again. Right on the floor at Spring Condex1 discovered the perfect metaphor for the show itself: a large transparent plastic box with U.S. currecy bölwing around in it beneath a sign that boldly urged, Grade for cash. Once each hour, some bucky soul whose name was drawn would be invited into the booth and given the opportunity to take home as much eash as he or she could pick up in a milline's time.

Or something like that. My notes are incomplete. Your notes on these shows are always incomplete. You dutifully attempt to see everything; after hours of tramping around on carpets that are just a little too thin (IBM generally has the thickest rugs, to soften the arrogance it generally makes its users stand for), you begin to get a little runchy.

Every hour on the hour I managed to miss the cash-grabbing because I could not pry from my lapels the desperate mitts of a salesman or flack insistent on explaining the manifold vitrues of his or her all-new just-like-the-last-one clone, modern, printer, magazine, cable adapter, or three-ring disk binder. But I did come away with the important point about the cash-sprain meta-

phor: it left me with no clue as to the name of the company or product whose booth it graced.

You begin to question the rationale of the trade show when you notice the longest lines in the place are for Tandy's quarterscale basichalist suttorpated by a suttorpated by a suttorpated by a tented to promote, either. Every time I stopped by the booth to said, "Spad" was not lo lanch with every-body who could enlighten me, and a come-body to the could enlighten to the could enlighten to the country price, or else "Spad" was on the case and the line was so long you couldn't get me the booth. My rough guess is that Tandy is about to introduce a new SCBJ-interface baskedhil-form-factor-half-form-factor

BEATLEMANIA The one promotion that made any sense was the one dreamed up by Number Nine Computer Corp., maker of the SGT and Pepper graphics



boards. The firm raffled off—what the?—opies of the brand-new Beatles Sig.//pgpr/CD lEsswhere, popele on the floor tried to hand me tiny suffeed pands with plants good cycles, imprinted yoment of the plants of the properties of pression with my showstopping rendino pression with my showstopping rendino for numl-the-world), guides to goo po har—no. I guess that last one was outside on the street, where the air was ten does to the street, where the air was ten does cocker than the average temperature of Hades.

In the appurent belief that sweat breaks down sales resistance, the power-that-be always manage to hold these things in such test sinks as Mattan. Las Vegas, or mid-summer Manhattan. The air-conditioning in the hall is always set in the disconflort zone, but except for women and unruly members of the press, a business suit and tie are de rigueur. I keep reling vendors would be a fidding fan; everybody in the place would was relief fan; everybody in the place would was relief and pressage around with asptoxical currency.

However, the fan must be made of plastic. The most important law of a trade show is "no paper by hand." If you accept even a fraction of the printed material pressed upon you by enthusisstic product-pushers, you wake up with sore shoulders and an overflowing hotel wastebasket. Veterans hand over their imprinter-card and let servants of the U.S. Government deliver the literature to the office, where a secretary can dissons of it sadely.

The second law is that the nearer to the perimeter of a booth you find a particular person, the lowlier and more ignorant that

STEPHEN MANES

person is. Corporate heavies are always immersed in conference with potential buyers deep in the booth's inner sanctum or back at the hotel suite and can't be interrupted by mere quantity-one peons.

choose from a menu that you

define. You can move quickly to

word processing, a data base or to any program on the hard

disk. Direct Access Usage Track-

ing will follow your every move

and orint out detailed or sum-

marized reports of computer usage. Custom Applications alk

you to execute up to 20

a single key stroke. Pass-

word protection at all levels keeps your valua-

ble data secure.

nes of commands with

Then there are the bring-the-bicarb parties. It is an ironclad rule during trade shows that all alimentation must be accomplished standing up. I suspect a chic nohands beverage holder would be another

popular giveaway. So might a hip flask: certain born-again corporations serve nothing more potent than Coca-Cola, which rarely produces the aching head and bleary eyes so essential to the trade show

mystique.
Why do we endure these things (with the exception of Lotus and Anhon-Take, who lately have found better things to do/? Two reasons: to meet people and to see products. In the almost-human realm, you meet old acquaintances, make new contexts, and excessionally run across a highlight such as Bill Gates bouncing like as a season of the context of the context of the context, and excessionally run across a highlight such as a bill context, and excessionally run across a highlight season and a season of the context of the

On the floor you learn the real nature of the business (Grab for cash) and wade

■ I keep telling vendors that the single most desirable freebie would be a folding fan.

through the many varieties of flattering imitation and label-swapping to find the odd interesting new product. Still hot at Spring Comdex were such things as Sharp's rewritable 380-megabyte disks using something the company calls magneto-optical technology, whose mysterious workings nobody could explain to me. Sota Technology's add-in 286 board for PCs and XTs claimed OS/2 compatibility, something current turbo boards do not pretend to offer, thereby making it an apparent first in a field that could conceivably heat up sometime in the 1990s when relevant anplications arrive. Quadram was even touting a 386 add-in board for PC-class machines

chines.

And, no question, these events do provide educational opportunities. Until now,
I never really knew what single hardware
or software feature most vendors consider
most important. By eavesdropping on a
couple dozen conversations, I finally
found out the profit marein.



Delta Technology's direct

access was the most complete

package, offering ease in use,

customization of menu selec-

tions, and a sorting function

in the reporting utility.

Think You Need an AT?

Think Again.

TABLE OF BENCHMARK RESULTS

This table shows the results of the from PC Magazine, or via the PC Norton System Information Test, is processor/coprocessor speed tests us-Magazine bulletin board. These not from PC Magazine, but is part of ing the April 1986 release of PC results were obtained by us at PCSC, the popular "Norton Utilities The Magazine's PC Labs Benchmark and are not yet official published PC version we used was 3.1, which is the Tests'. These are public domain programs, and are available on diskette

The last line in the table, the identical results to older versions.

latest version but may not give

	IBM PC	IBM AT	BREAKTHRU 286		
Clock speed in MHz (IBM PC is 4.77)	4.77		8	12	1.
Empty Loop	1	1.99	3.34	5.15	
Integer add from memory	1	3.35	4.41	6.02	
Integer multiply from memory	1	6.06	6.55	8.3	1
Floating point without coprocessor	1	3.33	4.42	5.76	
Prime number test	1.2	1.95	2.85	3.7	1
Lotus 123 macro (640K)	1	2.64	3.69	4.62	
Lotus 123 macro (256K)	1	1.77	3.54	4.38	
Norton System Information Test	1	5.73	7.34	10.2	1

In every case but clock speed the numbers indicate how many times faster a test is

performed than on a regular IBM PC.

Breakthru 286

"The Breakthru 286 performed flawlessly with every application we handed it, including copyprotected programs and nine memory-resid utilities at once." Stephen Manes, PC M

"... Breakthru 286 is a good value and a quality product backed by effective support." er of the AutoCAD User's Group

Make Your IBM PC Faster Than an AT in Just 5 Minutes!



The Next Generation

Breakthru 286-8MHz-\$395 Breakthru 286-12MHz-\$595

in IBM PC

Speedup

Boards

LIGHTNING™-FREE with Breakthru speedup hardware-\$89.95 purchased sep-

We are excited about our three speedup products. You probably know about our Lightning disk access speedup software that was awarded PC magazines's Best of 1986 award (see box). After the smashing success of Lightning, we developed the Breakthru 286 board to be literally the most advanced, fastest, most feature-rich board available. Now we go ourselves one better with the Breakthru 286-12. This new board has the clock speed cranked up from 8 to 12 MHz for speeds up to 10.1 times faster than an IBM PC.

From September 1986 we guaranteed that Breakthru was the best designed and most functional speedup card available.

And the runaway success it has enjoyed truly proved that assertion.

DON'T TAKE OUR WORD FOR IT. USE EITHER **BREAKTHRU 286** SPEEDUP BOARD **FOR 60** DAYS. IF YOU ARE NOT SATISFIED RETURN FOR A FULL REFLIND.

But, no speedup board cuts disk access time in half



"Lightning is almost mandatory... It has been utterly trouble free in the year I have used it." - Steve Manes, PC Magazine Best of 86 review.

Loads with the DOS - always ready as a background program to accelerate disk access. You do nothing erything is automatic. LIGHTNING does what a speedup board card. You are going to be so amazed when you start to work with

LIGHTNING installed. Most programs that frequently access the disk phart disk or floppy) like databases or word instantly taster - up to 2 to 4 times faster. LIGHTINING enables any program to approach the same rapid speed as a RAM Disk, but it does it without

the RAM Disk danger of losing precious data if you forget to sale it. If works by a principle borrowed (and greatly enhanced) from main frame technology called caching. But it doesn't speed up the microprocessor. You need a speedup board to INCHITATING is the standard against which all our competition measures itself because we achieve universal compatibility with other software and with complete reliability. Data is never lost, LIGHTNING fully exploits Above

Board memon Order LIGHTNING separately or get it free with your Breakthru 286 board "...the Breakthru 286 was the card of choice." PC BusinesSoftwareview (Rated #1)

"The 12-MHz Breakthru 286-12 speedup board is the fastest of those tested, but not the most ex-

pensive. On a dollar per-horsepower basis, it could be called the cheapest boost available for an XT."

Mark Welch, InfoWorld (Rated #1)

"The PCSG Breakthru 286 achieved the best performance results of the caching boards tested."

Ted Mirecki, PC Tech Journal (Rated #1)

And now we have a new Breakthru 286-12 board that is 33% faster than the regular Breakthru or regular 8MHz IBM AT, and up to a whopping 1,000% faster than a regular PC How wonderful to convert a PC or XT or clone to a \$4000 AT without

> memory provides zerowait-access to the most recently used code and data. Look at the benchmark tests box to see how our two boards compare with the PC and the AT. Speed is addictive. You'll never want to go back to slow again.

universal.

the expense.

But when you

get ready to spend \$395.00 or \$595.00

you want to be sure your choice is

Faster and smarter than an AF-

HERE'S WHY THESE TWO

It is a half-slot card, only five

BOARDS ARE SO SPECIAL.

First, they install so easily.

inches in length. You don't even have

to give up a full slot. What's more,

in the Compaq Portable and most

clones. Easy diagrams show how

you just place the card in an open

slot, remove the original processor

no software required. From that

moment you are running faster

than an AT.

and connect a single cable. There is

Second, it is advanced. The

unlike competing products it works

the very best.

PCSG guarantees it.

BREAKTHRU 286-1

Third, you have full compatibility. All existing system RAM, hardware, and peripheral cards can be used without software modification. Our boards operate with LAN and mainframe communication products and conform to the Lotus/Intel/Microsoft Expanded Memory Specification (EMS). Software compatibility is virtually

for numeric intensive

applications. A 16K cache

Fourth, these are the best. There are several other boards on the market. We at PCSG have compared them all, but there simply is no comparison. What we discovered is that many cards being sold offer only a marginal speedup in spite of their claims and others are just poorly engineered. For example some boards have a cumbersome mechanical switch for going back to 8088 speed, but the Breakthru boards have speed switching software that allows you to drop back to a lower speed on the fly for timing sensitive applications. The 8MHz BREAKTHRU 286 and the 12MHz are unequivocally the best executed and most completely reliable

speedup boards manufactured today CIRCLE 489 ON READER SERVICE CARO

We are so pleased with the BREAKTHRU speedup card. We use them on our own PC's to make them faster than AT's. We are really excited about this product.

PCSG makes the unabashed statement that the BREAKTHRU 286 card represents more advanced technology than boards by Orchid. Quadram, P.C. Technologies, Phoenix...we could go on. The Breakthru 286 is undisputedly the fastest turbo board with the biggest bang for the buck. And we include FREE the \$89.95 acclaimed Lightning software, which complements the Breakthru 286 by dramatically speeding up disk operations.

But an ad can't let you experience it for yourself. That's why we sell either BREAKTHRU 286 8MHz or 12MHz on a 60-day trial. If you aren't completely satisfied return it within 60 days for a full refund. Call today with your MasterCard, Visa, American Express or COD instructions and we will ship your card the very next day.



11035 Harry Hines Blvd Suite 206









Call the SBT dealer nearest you.

ALABAMA	DELAWARE	FOGGRAM	NEW YORK	SOUTH CAROLINA
Placeness Cloude Note Consulting 205/766-4745	Doner Computeredor Inc. 302/734-8862	Summa Sarvicer Spannar Sarvicer 504/363-4267	Album Professional Computer Solutions 336:439-8830	Executor Plantary Computer Sentent 803/286-9538
ARIZONA	FLORIDA	New Orleans	Buttolo Micro Support Services 716/455-3623	SOUTH DAKOTA
Temps Electronic Development Company 602/994-6277	Bootto Springs Innovative Computer Committees 813,992-6500	Software and Stuff Inc. 304-838-9999		Pleces Computer Conter 601/234-1720
		MARYLAND	Long Island Obs-Thought	TOMOSTEE
Person Rent Ross Corporation 602/201-3456	Galosertile Labertory Consultants	Baltimore Compounded 303/027-5678	\$16/929-3958	Charistongs
	904/376-2843		New York City American Computer Training Center	Chatteengs Software Development 615/266-5770
ARKANIAS	Jackson für.	Galthershoog Coronty Associates 301/258-0077	American Computer Training Center 2/2/716-4449	Francis
PL South Father Mayo Committing	904/396-0060	301/258-0077	Bockenier Schooler Date Counding	Computer Assisted Services 625/092-2525
501/783-3296	Key Wort	Stirve Spring	Schooler Date Cresiding 7/07/07/4238	
West Monophie Spran Nostin, CPA 361/753-3778	SCCS Computer Sentes 305/294-5652	Jeformation Attorney Associates 36 0 585-0 158		Manufal Business Systems 411/273-4130
361/752-3778		MASSACHUSETTS	Valley Cottage Trents 9/4/240-3463	613/373-6130
CALIFORNIA	Laborecth GOC Business Seasons	Artingson GTX Corporation	914/385-3361	TEXAS
Aprents Honig's Software Consolling 201/020-7550	305/333-2763	GTX Corporation 6.E7/641-4000	NORTH CAROLINA	Dellas/Richardone Software Town 214/427-4868
767,623-7550	Minesi Entiré Micre Sontene		Asimille Computational 20x/27s-065e	234/427-abox
Enterolisid	Eneral Micro-Systems 305/494-0990	Desirate Desirate 677/535-6900		El Paris
Computer Beston 805/934-0123	Oriente		Charleton More Research Corporation 704/136-1267	More Logic Product Centers 915/512-9574
Berbates	Orizonia Software Eletheniani JUS-1994-1984	Turner's Palls D.B.S. Consulting Services 423/863-2448	704/136-1267	Houses
Sieves Moyers Committing 415/325-4968	GEORGIA	423,783-2448	Crespitore	Houses Resource Inc. 7/1/422-4900
	GEORGIA Adams PSI Susana	MICHIGAN	Self Assess 979/282-4428	
Campbell Victy Colline Associates 400/370-3840	PSI Systems 404/48.1-4190	Detroit Southfield Misse, Carson and Associates 313/440-5000		San Antonio GEM Somme \$12/377-3145
406/370-3840		315/440-5050	Rateigh/Dechem Caroline Software Services 930:872-3498	\$22/377-3345
France	Angesta Data Master	Lauring		Self Lake City
Frems More Business Systems 2001473-0440	404/722-4272	Enter Computer Store 527/253-2532	NORTH DAKOTA	Septement and More 801/272-9425
Los absentos	HAWAII Boodnis Jodins Counding 800/124-1066	MINNESOTA	Minet The Computer Store 761.036.7667	
Las Alambos Applications Source I 213/430-6650	Johnson Consulting	Householts Comments Suppose		VERGENEA
		472/003-4880	Celtro	Amendale Smart Soft 701/354-2228
Las Angelos/Culver City Computer Maximo 213/045-6530	Enter Control	MISSESSIPPI	Columbus Espec Company 634/221-3251	
	Balos MTM Computer Service 200: 365-00 17	Justines A and A Computer Consultants 80.0014703	Contract	Marketery More Sensor Specialists 201/252-6511
Placertille Placertille Computer Services	ILLPOS		Torodie Computer Systems 5.15/211-466	2017-222-4272
136-421-1221	Election forms and Associates	MISSOURI		Vienna
San Bernardon	628/368-1411	Kenner City Country Technology \$14/753, 2000	Clareland Electronic Business Systems 236/867-8363	Composition Ste. 263/255-8777
Swaf Saturna Support 734:807-6071	Mandalais		236/863-8363	WASHINGTON
	ICY Date Contr 312/949-9026	St. Louis Adult Com. Symme 314/565-7139	Canton	Bellinghess Compounded Information Systems 206/276-5584
See Diego LANTECN		314/985-7189	Canton Minute Antopuston Sambos 236-994-8885	206/076-5384
6.89/296-8777	Naparellin Esperi Computer Systems 312/436-2352	MONTANA	OKTANIOMA	South
San Francisco/Buctingame	3/2/436-2182	Historia HC4 Computing 404/720-4479	Prince Databay Computer Systems 938/647-9829	Finis Consisting Company 200/347-4822
AEN Amodan 425/897-00%	Niles Septembri Contro International 312/965-9044	406/720-6679	918/4/2-98/29	Sealmen
Sama Montes Zahra Computers	312/965-9044	HERRASKA	DREGON	Committee (Redmond
Zahra Computers 223/450-7330	Endthel	Colombas Mare Data Technologies	Engene Fax Business Builders	Self-Self-Self-Self-Self-Self-Self-Self-
Santa Rosa	Resident PC Selections 825/823-2050	402/563-4224	303/343-7948	Terms/Persites
Outside Support Services 767: 575-3353	DIDIANA	NEWADA	Pertinol	TannaPopulinp Pater Computer 200/845-9673
	Ermerille	Base D and G Computer Systems 702/025-0230	Professional Polar Systems 303/773-4410	
Tuetia Software Service Conter 7:0/544-0209	Eromettle Companies \$12/422-4487		PENNEYLYANIA	WISCONSIN East Claire
	Part Warns	NEW HAMPSHERE	Landardle Mais Sinet Software 7/7/006-2946	715/832-3444
Woodland Hills	Creative Compasing Inc. 299/486-9657	Hazarest Dualness Automation Specialists 605,943-3003	7/7/30s-2946	
Woodland Hills Adder Computer Technology 838-703-8550		NEW JERSEY	Philippints	More Resource 414/279-4133
COLORADO	HOWA Waterlee		Philiphida Handard 225-996-9933	
Sundan Surveit Date Corporation	Westerlan Software Service and Support 375/230-3454	Micre-Strategien 201/625-7721		AUSTRALIA Discourt Computers 41/22/24918
305,440,4199	KANSAS		Valley Computer Consulting 4/2/457-2727	
Desirer		Strekton Economic Associates of New Array 800/197-0536		COURSE STORY STORY
Decree Delahony and Associates 303/129-6257	Entry Computer Conter 116/062-4300		PUBLITO RICO	Management Systems Resources 436/790-4982
CONNECTICUT	KINITICKY	Creative Results 201/100-2006	Guerrade New Day Technology 800/793-7027	New Zooland
Waterbury The Software Guidance Company 201/797-4012	Lestington Compa-AM 606/267-2633			PC Power Limited 485-66-98
203/797-4012	606/261-2411	NEW HEEDCO	RHOOK ISLAND Providence University	
Manage		Albegoergen Deug Cours Associates	Decree	South Ayusta Southers

Let an SBT consultant show you how our source code sets you free. The above limited design are independent consultants. SBT makes so representation, express or implied, with respect to their qualifications, competence, making the consultant is set to be a set of the consultant in t



Get a new handle on your business with SBT.

Now Available for SCO XENIX



Now you can handle up to 254 users, all working in the same data files, with the SBT MultiNet Database Accounting Library. The accounting software written in dBASE III PLUS.*

So whether your business is large or small, you can grow to the limits of the most advanced PC networks available.

When you want that special report or your

When you want that special report, or your business needs something we didn't think of, you can quickly and easily modify our programs to meet your needs exactly (because our dBASE source code is included).

And if you don't have time



to make the changes yourself, there's a nearby consultant who can make them for you. So if your company has two users or two hundred and

two users or two hundred and fifty, you can add customers, update records, and have as many people enter orders as it takes to keep your business growing.

Isn't it nice to know there's software you can't outgrow? The SBT MultiNet Database Accounting Library. Now you can get a new handle on your business. Call today for our demo disk, brochure and for the name of the SBT consultant in your area. (415) 331-9900.

THE SBT DATABASE ACCOUNTING LIBRARY. dProfessional Time & Billing \$395 dOrders. Sales Order Processing \$295 dInvoice Billing/Inventory Control \$295 dStatements \$100 Accounts Receivable dPurchase Purchase Order \$295 dPayables Accounts Payable \$395 dPayroll Payroll/Labor \$395 dLedger General Ledger/Finance \$395 dAssets Asset/Depreciation \$295 dProject Project/lob Accounting \$395 Tenant/Unit Management 5395 Manufacturing Planning \$395 dMenu/Backup Menu/Backup \$ 65

MultiNet versions \$200 additional per module

One Harbor Drive Sausalito, California 94965 (415) 331-9900 Telex 9102404708



Automating Your Books,

Accounting and decision support packages touch the heart of an enterprise—recording and analyzing everything from who and what your company owes to which of many options offer the greatest opportunities for growth.



usiness software—it's as hard to define as it is to buy. In one sense—forgive the teathology—business software used in business. But that's oo broad and eavy a definition to be useful. After all, WordPerc is certainly widely used for business gets, and dBASE for business gets, and dBASE for business gets, and dBASE for business person, and dBASE for business person, whose success in turn depends on their widespread use in business.

pends on their wickspread use in nassness. Certainly 1:2-3 spreadsheets have an enormous range of business applications. Certainly many business PC users have come to depend on 1:2-3, almost to the crudition of other programs, for their work at made for WordPerfer, 4:86.45; and a fundred other programs in a dozen other applications categories. However, we prefer to define programs list these as personal productivity tools; hence none of them appear in the reviews and articles in this issue.

In practice, such programs—powerful business tools in their own right—have become firmly entrenched, not because they inherently advance a business's purpose, but because they empower the individual worker. These programs act as levers for the minds of dedicated, intelligent people

who find in them the tools they need to gather and analyze information and to convey that information to others. Since the main impact of these programs is at the individual level, we consider them personal productivity tools.

What, then, do we mean by "business software"?

At PC Magazine we apply that term to software that is used-and that has impact-enterprise-wide. That is, these programs encompass a wider view and have wider impact than any single personal-productivity package. They fall, generally, into 14 categories: accounting, decision support, business forecasting, project management, practice management, personnel management, time management, tax planning and preparation, order entry, telemarketing, investment planning and analysis, spreadsheets and related utilities, databases and related utilities, and voice mail (Watson-like products that, basically, turn a personal computer into a telephone answering machine).

Accounting software is the classic example of software that has an enterprise-wide impact. For that reason the greater part of this special blockbuster issue is devoted to comprehensive reviews of accounting programs. These packages—which, in a more precise lexicon,

would be called bookkeeping program—are really nothing more than datasense the real program of the program of the called the calle

Because accounting programs gather a business's most sensitive records—sensitive records such as particular to the country particular to counts Payable) to who owe syour company, and how much (Accounts Receivable), to how much people at the company make and how often they ought to get paid (Payable 101), to what's on the shelf and in what quantities (Inventory), and so on—they cut across individual productivity and and go directly to the heart, and health, of a business.

Similarly, decision support systems, which are also covered in this special issue, help analyze enterprise-wide trends and opportunities. Although these programs are used most intensively by one person or a small group, they contribute results that affect, and are used by, people throughout the company.

Analyzing Your Options

CLONING DOWN FROM MINIS Until the last couple of years, most PC-based business software came down to the world of personal computers from minicomputers, carrying along both the strengths and weaknesses of that environment.

Among the strengths of that environment are such welcome, mature characteristics as robust data structures and (at least the possibility of) concurrent access by several users. But its weaknesses are that little has been done to improve the minicomputer world's ugly and often illogical data-entry screens or to redefine printed reports, such as balance sheets, to reflect the peculiarities of a given business. Most programs that have come down to PCs from the mini environment are about 10 to 20 years old, predating such concerns as human factors. And the batch orientation of minicomputer software, as opposed to the interactive approach of software developed in the PC environment, reminds many users just why they fled minis in the first place.

Now we're seeing serious business software developed specifically for (if not necessarily on) PCs. The differences are dramatic. We would have been unlikely to see Q. W. Page Associates' NewViews accounting software developed for the minicomputer community, for example: its novel approach would have been an even bigger heresy there than it is on the PC-and, worse, it would have baffled mini users. Why would mini users want to be able to slice and dice data in as many new and useful ways as they can with New-Views-right at the PC-when they are accustomed to thinking of "the accounting system" as stacks of printouts that are already obsolete when they arrive? But, in fact, the program has brought a "new view" to accounting software with its many views, or presentations, of information. It flouts accounting conventions and, for that reason, is not often applauded by traditional accountants.

That issue—the "aliveness," flexibility currency, and assifulness of the data manipulated by the system—is one of the keys to understanding the most important strengths of business software on the PC. When you're accustomed to using the results of a computer system by flipping through a sheaf of 11- by 15-inch greenbar

sheets stuck in a data binder, the idea of sitting down at the machine yourself and manipulating the data to see what's happening in the company is at least odd, and probably frightening.

Yet that is exactly how most businesses that keep their books on larger computer systems work: you batch the data in (data entry); batch the data out (run reports); and batch the analysis (pore through page after page of printout, trying to divine What It All Means).

UP-TO-DATE FLASHES To be sure, that system has its strengths, especially for larger enterprises in which the idea of top management sitting at a PC and fiddling with the current month's financials is he-

t's hard to imagine General Motors

chairman Roger Smith sitting down at his AT and scrolling through this week's parts-inventory records.

retical. It's hard to imagine General Moc tox chairman Roger Smith sitting down at his AT and scrolling through this week's part-inventory records or work-in-progress report or last mouth's income statement. In one of business's deadliers abem, for him. And of course, they don't work at the composer directly, either, they paw through printouts—which, no matter town quickly delivered, unavoidably entail a coadly and frustrating time lag between arrived of the data on your deak.

But with the size and complexity of GM's business, and the resulting need for layers of specialists, we don't *expect* to find Roger Smith bent over his PC.

But it's not hard at all to imagine senior management at thousands of middle-sized companies sitting at their PCs looking at and working with current-period didat, or monthly results just a day or two into the cut mooth. Though the printsous may react mooth. Though the printsous may react mooth in propriate or a long and it makes you look terribly important on a long millier flight when you're writing flight merginal notes opposite subtotals—floy're recognized for what they are: Illeless manphoto date that the proposition of the propriate of the properties of the

That's what the PC has done for accounting at many businesses. It's brought immediacy and widespread usefulness to businesses' accounting data. And it's what PCs will be doing for many more businesses—and much larger ones—as PCbased system capacity grows in huge leaps over the next 2 years (thanks to the ability of the 80386 chip and the OSt2 operating system to address much more program code and data).

THE INTERACTIVE MODE Outside the world of green cycshades (should we find a more up-to-date metaphor, perhaps "green phosphors"?), business software is also taking major strides. Decision support systems (DSS), for example, have sprouted on the PC and—because of the speed, economy, and sheer pleasure of working in an interactive mode—have become popular.

In "Searthing for Solutions," PC Magazine's Spreadsket Clinic proprietor Jared Taylor and his brother. William, Jared Taylor and his brother. William, tackle the idea of decision matrixes as a part of DSS. Constructing a weighted decision matrix is not so different from what most of us afterady do when we re deciding whether to buy a new car or at which lending institution to refinance our morteage.

But, as the Taylors point out, DSS software brings order and structure to the process, to say nothing of getting the numbers added upright. M. B. A. 's may be comfortable doing decision matrices on the backs of envelopes; for the rest of us, using a program that prompts, pokes, guides, and chides us through the process is both safer and more morductive.

DSS itself is such a variously and vaguely defined area that business people can legitimately point to several kinds of programs, claiming each as a DSS tool. What's DSS? Try this: a system capable of modeling a situation in a way that performs a quantitative analysis on the outcomes of various courses of action that might be taken within that situation.

Certainly, then, 1-2-3 is the most wideby used decision support tool in business: we use it to turn out little spreadsheets to test profitability, to do sensitivity analyses, to calculate and compare internal rates of return on capital investment alternatives—all as a basis for making business decisions. But 1-2-3 is far from the classic DSS package.

Javelin, from Javelin Software. Corp.—and sepcially the new Javelin Plus—is an exceptionally powerful, yet intellectually accessible DSS tool, although, again, far from conventional DSS turf. For time-series financial analysis—which is to say, over 95 percent of business DSS activity—it's difficult to imagine a quicker and easier tool to use than Javelin.

If you're a business-school graduate of the late seventies or early eighties, or a devotee of Box-Jenkins time-series forecasting, The Forecasting Edge from Human Edge Software is an under-\$100 DSS tool of remarkable power and ease of use. But few would call it mainstream DSS either.

THE NEW ARRIVALS Many will claim tot only traditional modeling languages produce the DSS. But when those now nPC, as well. One of the sleepers in the TC business software market is Eucocom or the production of the production of

Lotus users weep when they see how easily IFPSIPersonal statements can build what would be a vast, complex, time-consuming spreadsheet, one that's tough to build and tougher still to debug and maintain on 1-2-3. The fact that those statements appear in the English language, not

in Lotus's cryptic @-sign function notation, is icing on the cake. Ferox Microsystems' Encore!, another PC-based modeling language, is also a gem—a system of unexpected sophistication and power well suited to the DSS needs of corporate plan-

ners, treasurers, and controllers.
Because personal computers (even those once tied so closely to the characteronly world as IBMs and compatibles) can handle graphics well, we'll see major strides in the ability of PC-based DSS soft-ware to report their analyses of our options

in graphical form.

Lotus graphs are clearly meant to serve that purpose. As ugly and inadequate as they are when printed or plotted and used as presentation graphics, 1-2-3 and Sym-

hen we venture into business software's companywide impact.

we also enter a difficult and threatening world of data security

issues.

phony graphs are superh analytical tools. Define the graph's parameters, look at the graph to make sure it's right, then name and save it. Hit the Spacebar, and you're back in the worksheet. Change some values, hit FP (receipslay graph), and you see the effect of your worksheet with the property of th

When Microsoft's Excel for the PC arrives in a couple of months, we can combine all that on one screen, thanks to the
Windows operating environment—and
with far better graphs, thanks to Excel's
superior design.

Lightyear, one of the programs in this review, is a super-simple (and perhaps oversimplified) DSS program for PCs that emphasizes graphics output of weighted alternatives. We'll surely see more Lightyear-like packages in the future, some with greater emphasis on features than on marketine hype.

THOU SHALT BACK UP When we leave the safe, secure world of personal productivity software and venture into business software in the safe, secure world without a software leaves the safe security issues. It is bad enough if Coorge is presidabet, analyzing bow much we might belt on the Steek Competitor's hand, but it's custartophic if our accounts receivable system is lost and we are reduced to wondering who, if any-one, owes us money. That's called putting yourself out of business.

But both problems go largely unaddressed by PC users in business.

Data integrity stands on two legs: good backup practices and good data security policies. Installing good backup routines ought to be as fundamental to installing a PC-based accounting system as building

the chart of accounts for the system. The first step is obtaining a reasonable backup medium, such as a Bernoulli Box cartridge hard-disk system, or a streamingtape drive under the control of a reliable image-based software package. The next is helping the people doing data entry to establish a rotating, grandfather-father-son system of multiple backup tapes or cartridges. Requiring frequent backup cycles (such as twice daily-before lunch and before going home in the evening) makes it possible to bring the system back up in nearly current form when there is a system failure. And, finally, the last step: setting up a workable, regular, and secure system of off-site storage of daily or weekly backups to protect against the catastrophe of fire, wind, water, or theft of the computer system

For DSS and other, more widely distributed business software applications, ensuring frequent backup and attention to data access issues is extremely difficult. Trying to get midlevel management peoble to back up hard disks, for example, is

ETHICS AND ARTICLES OF FAITH

Words of interest on vested interests from the viewpoint of clients, accountants, and editors at PC Magazine.

t's nearly an article of faith at PC Magazine that no one should move from manual to computer-based accounting without the guidance and help of an accountant experienced in computerized bookkeeping. But within that faith are complex subtexts and ethical questions over such issues as accountants' involvement with specific software packages and the companies that produce them, the Big Eight accounting firms' efforts to sell software that they have written and published themselves, and even the role Price Waterbouse has played in helping PC Magazine develop the comprehensive accounting software reviews in this

A common complaint of small-business owners is that their accountants are not particularly computer literal—and that so that the property of the computer literal that the property of the computer that of the computer literal that the computer that of von frunt, as well as their interest in their own professional development, have begun to change that situation. It's hard to imagine an accounting firm of more than two or three professional was even surviving today without in-house computer support and, at least, PC experience.

As practicing accountants have pout their own work on PCs and have moved client write-up—data entry of clients' transactions—onto those same PCs, a large number of them have become reasonably familiar with what to look and was compared to the properties of the prosent of the properties of the protrails, inadequate prodefined reports, and initial dorson-estissent) ability to modify those reports or create new ones to meta a client's specific needs.

JOHNNY ONE-NOTE This has led many accounting firms to adopt one or two name-brand PC software packages. install and support them, and perhaps even sell them. And that leads to at least two potential problems:

First, that a firm's interest in making profits from the sale of an accounting software package will lead it to promote the package, with the firm's professional endorsement, more vigorously than the quality of the package may warrant—and possibly in ways that are unseemly in the context of a professional relationship.

with a client.

Second, that an accounting firm will begin promoting a single accounting package to all or nearly all of its clients,

any computerliterate accounting firms adopt one or two name-brand PC software packages, install and support them, and perhaps even sell them.

whether the package is suitable for them

or not.

The first problem, a sticky one, has been a topic of wide discussion within the accounting profession. In practice, the real added value that an accountant brings to an engagement is his professional knowledge and counsel—and, by and large, accountants recognize that. They are unlikely to try to make extra profits by selfine an inadeoustic or inan-profits by selfine an inadeoustic or inan-

propriate software package at the risk of alienating the client and thus losing a continuing stream of revenue. (The accountant's self-interest in behaving well is clear no CPA wants to work with a buggy, clumsy, error-prone accounting system.)

Although many accountants would prefer that their colleagues sold nothing but their time and advice, the thin and uneven distribution of most accounting software-even the very good packages-compounds the problem. If there is no local distribution of and support for. say. Solomon III or Great Plains Accounting Series or BPI Enterprise Series in Waukegan or Wilmette or Waxahachie, are accountants in those areas doing their clients a service by recommending those packages-then patting them on the head and wishing them luck finding them? Delivering the software itself (always as a clearly ancillary product, never sold without the accountants' advice and expertise) seems an ethical and proper step.

Moreover, given the depressing amount of really awful accounting software on the market, isn't there also something commendable about an accounting firm learning what works and then sticking with it?

COVERING ALL BASIS. The second problem—ecomending a single soft-ware package on a fallacious, one-size first-all basis—is more suble and case he traced more to human laziness than to avaice and ethical conflicts. It takes a good deal of time to develop an intimate knowledge of an accounting package: what it will and won't do, when data can and cannot be recovered, and how to country to the conflict of the confl

ly on the nickel of an unsuspecting client or two), the temptation is very strong to sit back and put that package into every client's office.

Sales pitches such as "We recommend and support CYMA for all our clients," or "We recommend and support Open Systems for all our clients," can be either a sign of hard-earned confidence in a good product, or a laye CPA's way of trying to turn a single accounting package into a Swis Army knife: a little bit of everything, but not necessarily what your need.

HOUSE-BRAND PPOGRAMS Another area of ethical concern has been move by Big Eight firms, especially, into developing custom accounting-related software packages for sale to their clients—systems for internal auditing. For example, Arthur Andersen, Arthur Young, Debitte Haskin & Sells, and Price Waterhouse all promote such software packages.

It is a fair question whether some, perhaps many, corporate clients accede to their accounting firms' suggestions to buy these house-brand programs simply because they do not want to rupture the highly valued relationship with their accountants.

Collinas may not know whether the pecker is really needed or works well. They may be read or works well. They may be up of any section that they come to the pecker is a substantially would in-time a relationary of the pecker in the pecker is a relation for not antaing up for the software. They may even for that their accountaints would resign the account (leading to an abrupt change of auditors—an even more damming note in the annual report) if they didn't buy the more amust.

But good clients are hard to find, and Big Eight firms are highly unlikely to ex-

act retribution for a client's turndown of an internally developed accounting software package. That would be unprofessional, a poor business decision, and

plainly stupid.

But should Big Eight firms—or any accounting firm, regardless of size—put their clients in a position where those

concerns arise?

PROFESSIONAL CONCERNS
Readers of this special issue of PC Magzatine will be encouraged to know that the
accounting profession is sensitive and
alert to these potential conflicts, as well
as eager to encourage ethical behavior
and to expand accountants' expertise in
working with small systems.

As the computer industry trooped off to Comdex in Adhanta in early June, the American Institute of Certified Public Accountants was holding its annual National Microcomputer Conference at the Informat in Dallas. I was a participant in that program and can report that compare related efficial questions, plus the need for CPAs to become better educated about installing and supporting small-computer accounting systems, were among the bottops.

THE BUCK STOPS HERE Finally, we here at PC Magazine, while welcoming the experties and insight of Bill Duphinais. Tim Lee, and the other Price Waterhouse experts we have consulted for this special issue, have throughout tre-served as the sole province of the children the final evaluation of all the software packages reviewed, the editing of those reviews, and, especially, the Editor's Choice recommendations.

Price Waterhouse has been an invaluable source of outside expertise, but the buck, as the man said, stops here.

-Jim Seymour

unbelievably hard—an exercise in fundamental behavioral change on a scale daunting to most workplace psychologists. Yet most nasty data-loss problems in corporations arise not from the corrupt, who steal data and sell it, but from the merely lazy, whose sloppy work habits tempt disaster once too often.

once two offent. a witty and perceptive IBM Institute speaker, has the only and IBM Institute speaker, has the only and IBM Institute speaker, has the only and IBM Institute speaker has been speaker in IBM Institute speaker in IBM Institute speaker in IBM Institute speaker in IBM Institute in I

Business people often worry more about what the boss will think if they spill coffee on the carpet than about letting their hard disk go down unbacked-up. Behavior is easy—well, easter—to change when people have a cleraly understood stake in the outcome of that behavior; inviting people to help save their own jobs works better than writing "Thou shalt make backups"

MOVING FORWARD Buying and implementing business software isn't an easy job. We know that; that's why, on accounting software alone, we assigned 44 reviewers to tackle nearly 60 software packages, each following a script an inch thick.

But the impact of good business software, carefully boken and implemented as if the business's very life depended on it (which it often does), can be very great. This special business software issue of PC Magazine is your guide to that products with tips, reviews, and products suitable to businesses from mon-and-op sale to hundreds of times larger. The next vers for perconal productivity to using them to move the whole business forward—is your.

Jim Seymour is a contributing editor of PC Magazine.



Enter A New Age In Accounting Software.

Dac-Easy Version 2.0, The Most Amazing Combination Of Speed, Power, Flexibility, Ease Of Use And Value Ever Offered.

Ever Offered.

We proudly announce Dac-Easy
Accounting, Version 2.0. The next
generation. It will break all previous

Accounting. Version 2.0. The next generation. It will break all previous standards of performance and value. Dac-Easy Accounting 2.0 offers you an in-

RODUC

credible number of powerful new features over the industry's long running best seller, the original Dac-Easy.

And for the same incredible price!
While others continue to provide far
fewer features at far higher prices, Due
has dramatically improved the revolutionary package that won InfoWorld's
1985 overall "Best Software Value" and
PC World's 1986 World Class Award.

Naturally, we've kept all the impressive features which have led nearly 200,000 users worldwide to rely upon Dac-Easy Accounting. New Dac-Easy Accounting 20 has over 50 major enhancements from the original record interest of the properties of the properties documentation, speed, improved its documentation, speed, the fixed by the properties of installation, ease of use, and power. Version 2.0 is about the properties of price. It offens you more than programs counting forces, but more than programs counting forces, but more than programs counting.

Experts Will Love Its Power. Beginners, Its Simplicity. And Everyone, Its Price.

And Everyone, Its Price. New Dac-Easy Accounting destroys the myth you have to trade-off power for case of use. Version 2.0 has awesome power plus incredibly easy operation that can help you better manage virtually any type businessfast. You'll have quick, finger-tip access to vital information about cash flow, pricing, inventory turns, sales trends, profitability, and more.

Redesigned in C language.

Due-Easy is amazingly fast in areas
such as sorting your files and reporting
information. Yet, there's never been
an easier accounting 2.0. With our
new, expanded manual and context
sensitive help to guide you every step
of the way, you'll soon be enjoying
the benefits of computerized
accounting.

Version 2.0 is unbelievably easy to install. To set up your files, you simply answer five easy questions. Douc Easy correctiently provides sample and Balance Sheet, which most businesses can use with little or no modification. And because new Duc-Easy is intuitively programmed, it saves you even more time and keystrakes during file setup. Every major file contains a pop-up window that for outparts of the contains a pop-up window that for outparts of the contains a pop-up window that for outparts of the contains a pop-up window that for outparts of the contains a pop-up window that for outparts of the contains a pop-up window that for outparts of the contains a pop-up window that for outparts of the contains a pop-up window that the contains a p

\$69.95

Best of all, Version 2.0 is available for the unbelievably low price of \$69,95. Compare its features with all other accounting software and you will agree. New Dac-Easy offers absolutely the best performance, ease of use and value in the industry! Feature For Feature, The Number One Accounting Package On The Market.

Never before have seven powerful accounting modules been so perfectly integrated in one system. General Ledger, Accounts Payable, Accounts Receivable, inventory, Purchase Order, Billing, and Forecasting work in single disk harmony to give you fast, Bexble reporting, analysis, and forecasting for service or product based businesses. Data that is entered once is automated to be a submitted to the control of the state of o

General Ledger Accounts Payable Accounts Receivable Inventory Purchase Order Billing Forecasting

New capabilities include departmental profit & loss by product line or customer, multi-company, point of sale invoicing, automatic back order control, sample Chart of Accounts & Financial Statements, service business billing, full help screens, on-line and batch processing, financial ratios and much, much more.

Add these to the features which have made Dac-Easy the fastest selling, most highly praised accounting package in history, and you'll see why Dac-Easy Accounting 2.0 is the best accountine software for your business.

FIEATURIES

GENERAL .

 Multi-company, multi-departmental Passwood protected el-tuensive 430 page manual with accounting primer eOn-line context-sensitive help effort-Start installation ePoint-of-sale eMenuoFast-Start installation oPoint-of-sale offeren of over 700 different reports impossed for services of Free phone support available oBatch & on-line processing.

GENERAL LEDGER:

Pencil & pen feature for corrections ol'nhmited journals eUnlimited accounts eAutomatic budgeting eFinancial ratios and more ACCOUNTS RECEIVABLE:

 Open invoice or balance forward.
 Flexible aging. •On-line sutomatic posting •Departmentalizat by customer of Customized text on statements

Cash flow analysis of Mailing libels of letuble

nvoice allocations of Year history of utomatic
finance charges onotepad window of Supports ral payments «Sales analysia and sales

ACCOUNTS PAYABLE:

 Check printing from multiple bank accounts
 Automatic allocation of available cash
 Vendor directories and labels of exuble aging o'On-line posting to other modules of exuble invoice allocations o'Ausonator reprinting of ebecks o'Notepad window o'Parchase forecasting o'Unlimited allocations per invoice o'10 Invoices rr eheck •Browse invoice and more BILLING:

advocing on plain or pre-printed forms of special service billing routine of sales journals of stocker terrarix of heline posting to other modules of rodat memors of eventue & cost allocation of acking lists. of post-of-sale invoicing and more

INVENTORY (PRODUCT OR SERVILLE;

«Supports 3 most popular costing methods

«Physical inventory routine with court sheets

«Accepts any measure of units «Special services

(the «Automatic changing of costing methods «3

Year biotory for all products and services with

automatic forecasting Automatic pricing assignments Alert & activity reports (On-line PURCHASE ORDER:

#99 Items per P.O., per line and total discourts in \$ or % •Full back-order control •Purchase journal eP.O. status report eOn-line processing and more FORECASTING: forecasting reports with tri-dimensional totals

Powerful

TO ORDER CALL TOLL FREE *1-800-992-7779*

IN TEXAS CALL 1-214-458-0038 30 DAY MONEY-BACK GUARANTEE

Dac offers 30 day unconditional guarantee on all products bought directly from Dac Software (less shipping charges). There is a \$10 restocking fee if the disk envelope is

*Registered users receive free support for the first 60 days (maximum 10 minutes) on every Dac-Easy software product (does not include upgrades).

Minimum Hardware Requirements: AE Doc Easy Products run on IBM or compatibles, the disk drives, MS-DOS of PC-DOS 2:0 or later. 50-column printer able to print 132 column in compressed mode, color or monochrone monitor, 250K memory (Dioc Easy Mala requires 34M-).

is John). -DOS is a trademark of Microsoft Corp. IBM & PC-DOS 2.0 are registered trademarks of international Business Machines Corp. Osc-Easy is a trademark of Dag Software, Inc., Datas TX 75244.



Free Support Now Available!

The new 2.0 series is so easy to install and use you might never need assistance, but if you do, fast Dac support is just a phone call away. Our staff includes experts in accounting. payroll, word processing, and database management who are ready to help you in the first 60 days without charge.* You can always count on Dac for quick, accurate answers.

Get The Version 2.0 Edge In Profitably Managing Your Business.

We're proud to announce that the rest of our Accounting series has been equally enhanced to match the industry leading standards of Dac-Easy Accounting 2.0. Dac-Easy Payroll 2.0 is the fastest selling payroll package in the industry, offering personnel management, automatic payroll processing, automatic tax calculations (all 50 states), and more. It retails for just \$49.95. Dac-Easy RePort 2.0 at only \$39.95 is a powerful report generator in addition to a file transfer utility. Just imagine creating custom reports using fields from any accounting or payroll file, plus having the ability to instantly send that data to your favorite spreadsheet or database.

Duc-Easy Mate 2.0 at \$39.95 provides advanced utility functions when working with Version 2.0

Dac-Easy Accounting or Payroll. Like long macros, handy notepad, full featured calculator, plus a fast backup utility that allows you to stay in Dac-Easy Accounting 2.0 while backing up files.

Our new Accounting and Payroll Tutor (\$19.95 per package) each contain an accounting or payroll primer, respectively, illustrations of best uses of the many management reports; plus step-by-step examples of common business applications. They're perfect for learning accounting and payroll basics, and for mastering the programs.

You win. The Version 2.0 family gives you absolutely the best combination of user conveniences, power, efficiency, and speed...at truly phenomenal prices. Act now and put the Next Generation of Accounting Software to work for your business!

Take Advantage Of Our Special Upgrade Offer.

The upgrade to Dac-Easy Accounting 2.0 is only \$35.00 and includes the Version 2.0 program, our totally new 430 page manual, sample Chart of Accounts & Financial Statements, plus Version 1.0 to Version 2.0 file conversion utility. Dac-Easy Payroll 2.0 upgrade is available for \$30.00 and contains the program, new manual, and file conversion software. You may also get 2.0 versions of Dac-Easy Accounting Tutor (\$15.00), Dec-Easy Payroll Tutor (\$15.00), Dac-Easy RePort (\$25.00), and Dac-Easy Mate (\$25.00). Call 1-800-992-7779 today with

your serial number to purchase upgrades for 2.0 products. You'll double your operating efficiency for a fraction of the cost of the original packages.



dac software, inc.

Dac products: Duc-Easy Accounting 2.0 ____ \$ 69.95 ___

Dec-Easy RePort 2.0

Add Shipping Charge

COOK 117



4801 Spring Valley Rd. Bldg. 110-B Dallas, Texas 75244

☐ Yes, please rush me the following

Dac-Easy Payroll 2.0 ____ \$ 49.95 ____

Dac-Easy Acct. Telor 2.0 ____\$ 19,95 ____

Dac-Easy Pay. Tetor 2.0 ____ \$ 19.95 ____ Dec-Easy Mate 2.0

___\$ 39.95 ____

2 90 95









•		7 7
	Method of Psymoni:	Check DMoney Or
	Accountil	
	Expires	
	Name	
	X Signature	
-	Company	Ph.#
	Address	
-	City	
_	State	Zip
_	Computer Brand	

Texas Residents Add Sales Tax (71/4%) L----CIRCLE 149 ON READER SERVICE CARD



"G/Remote Bridge" saves us up to four days delivering proposals by linking our NetWare LANs."

Says Dennis O'Brien, project manager/marketing services for UOP Inc., a unit of Allied-Signal.

UOP develops refinery technology, sells catalysts, and provides services to refineries and petrocheat plants throughout the world. With the center of the company in Dee Plaines, Illinois, communications to the home office is vital for remote offices and field regimeers. Responses to sales proposals with technical analyses flow to these remote sites from Des

Under Pressure For Quick Data.

"We used to have a problem exchanging data with the field offices. The number of steps we went through to provide accurate data was unacceptable; it seemed to take forever to communicate the data back and forth. Our specialists were always under a lot of pressure to get the information back quickly.

"With the help of Al Chaney, a Gateway VAR, we recently bridged our G/NET" LAN in our London, England office to our G/NET LAN in the Des Plaines office with Gateway's G/Remote Bridge. This connection helped us to resolve our information sharing and processing problems, and saved us as much as four days per proposal.

"The G/Remote Bridge even provides us with the ability to connect any NetWare LAN to any other NetWare LAN. In fact, we could expand up to 32 LANS in a common worldwide network using X.25 synchronous links, which take care of all the routing and error-correction functions.

Transparent Data Access.

"The best thing about the G/Remote Bridge is once you set up the initial configuration, it is totally transparent to the user. We even run Gateway's G/S/Maet!" mainframe comection over the bridge for 3270/3770 access from our LAN to our IBM mainframe to further expand the information sharing.

"Our Houston office will be linked to the Des Plaines LAN later this year to gain access to marketing data and mainframe services,"

For more information on how you can share information with products from Gateway Communications, just call

1-800-367-6555 (714) 553-1555 in California



2941 Alton Ave. • Irvine, CA 92714

G/Remote Bridge, G/NET, and G/SN/Anet are trademarks of Gateway Communitions. Inc. NetWare is a registered trademark of Novell Inc. Copyright(§) 1987 Gateway Communications. Inc. All rights reserved.

Making Every Number Count

Automating your company's books can help you improve profits, minimize taxes, design better marketing programs, and improve cash flow.



mericans spent nearly
56.265,000 on 28,400
PC accounting packages
the first quarter of this
pacar. And nearly 40 percent of those packages will remain on an
office shelf, never seriously implemented
by the companies that purchased thentimates by CPA professional societies sugcent that precruinge may be even higher.

Why?
Many accounting software systems were designed for use on a minicomputer and simply rewritten for the DOS environment. Very often, these programs carned a good reputation in the mini world but have not lived up to the expectations of PC users, particularly when the users are the owners of small to medium-sized compa-

nies. See sidebar "Missing Links." Many early programs developed for

PCs were written in BASIC or COBOL.

BASIC was often an early choice because of its wide availability and because there was a large group of people who could program in it. COBOL was chosen because it allowed easy conversion of minicomputer and allowed easy conversion of minicomputer it increased system performance. General in increased system performance. General in increased system performance. Great performance, and cumbersome on a PC. As use look more and more for portability and performance, C has become the language circum.

No matter what language they're written in, accounting systems require training to use. Once they are learned and applied,

they can make you more productive—if you've chosen the right program.

Ending up with the one that's right for you first requires that you have a good understanding of your business needs and of the kind of functions you want your counting package to perform. Choosing a package successfully requires a new package successfully requires a new who can plan, select and/or develop a fimancial management reporting system appropriate for your type of business, implement it, and train you or your staff to; Very often, that expert will be your accountant.

THREE ELEMENTS To manage a business, a reporting system should encompass three types of information (see the accompanying chart "Managing Business Information: The Big Picture"):

- Financial: managing your assets, liabilities, and net worth.
 Operational: managing the critical op-
- Operational: managing the critical operations in producing your goods and services.
- Decision support: integrating your internal financial and operational information with external information such as market conditions to help you make sound management decisions.

The cornerstone of a financial management reporting system is how it tracks and forecasts cash flow, profitability, basic income, and expenses. Sound business management depends on tracking collections

The cornerstone of a financial management reporting system is how it tracks and forecasts cash flow, profitability income, and expenses.

from cash sales and receivables and on timing payments to suppliers, utilities, and government agencies.

These functions are absolutely essential to every business. For that reason PC Magazine limited this review to evaluating the three core modules of each program that represent the operations basic to a financial management system: general ledger, accounts payable, and accounts receivable.

GIAPPAR In industry slang, "glappar" is the term used to describe the three basic financial operations: general ledger, accounts payable, and accounts receivable.

counts payanie, and accounts receivanie.

Accounts payable helps you manage check preparation and pay your bills. Accounts receivable helps you track customer purchases and accounts, manage the credit you extend to customers, and analyze their purchases. The general ledger



lets you organize and record information about your business transactions. It allows you to use that information to produce external financial reports, internal management reports, or separate reports to support tax reporting.

To fully explore the features of each package, we had our reviewers enter 2 months' worth of data on two companies into a single PC. We began automated accounting on November 2, using the account balances from our manual system, and ran the packages through a December 31 year-end closing.

Reviewers tested more than 300 features, the most significant of which are shown in the features tables that accompany this article. The third transactions that created new vendors and new customers. New accounts were required, but they also made recurring entries. They ran a variety of reports and examined how well information was carried from period to period. They also did a year-end closing.

Most of the accounting systems reviewed here include modules that cover company operations such as payroll, inventory, and job costing. Very often, the software in those modules is complex, general to the unique needs of particular industries and defined markets. For example, program features important to manuious employees from different states will be very different from those needed by a retailer who hires standard hourly employees and whose largest capital investment is

an inventory of finished goods.

AN ACCOUNTING LEXICON

Adjusting journal entries Transactions entered at the end of an accounting period to adjust general ledger accounts so that they represent the true financial position of the company. These correct errors, record revenues or expenses, or adjust the ledger for amounts that should have been spread over two accounting periods.

Aging Categorizes accounts payable or accounts receivable invoices by the number of days from the date that they were due for payment or collection. Balance-forward method All transac-

tions for the previous accounting period are summarized into one amount, the balance forward. All transactions for the current period are listed and added to the balance forward to create a month-end halance.

Book-tax differences The differences created by reporting revenue and/or expenses in one period for tax purposes and in another period for financial-reporting purposes. For example, the tax laws may allow aggressive depreciation of an item. However, the company may want to show a more reasonable depreciation on its financial statements to its investors. Chart of accounts The accounts that make up the general ledger. An account is made up of a description and a unique number to which transactions (iournal entries) are posted.

Current-period balance sheet accounts The balance sheet accounts that are affected by transactions in the current

period. Current-year data files Information that applies to the current year's accounting activities such as transactions, budgets, and month-end balances.

Dollar-value variance calculations The difference between the amounts budgeted for an accounting period and

the actual results of that period. Double-entry accounting A method of

recording accounting information in which the positive amounts (debits) in a transaction equal the negative amounts (credits). The sum of all the account balances in the chart of accounts will be zero if the transactions were posted properly. Five-and five account structure Account numbers are usually made up of a natural account (cash, sales, and so on) and a subaccount (department 10, division 5, and so on). A package with a fiveand-five account structure allows you up to five characters for the natural account and five characters for the subaccount.

Force Zero Proof option Requires a group or batch of transactions to balance (debits equal credits) before it can be accented as valid.

Generally accepted accounting principles (GAAP) A collection of standards, interpretations, assumptions, and methods followed by members of the accounting profession to ensure that financial statements for all companies are consistent from year to year and consistent from company to company.

Hash totals Totals created by adding nonfinancial information such as the account number. If the total differs from an adding machine tape made from the same items, then one of the items listed on the report was entered into the computer system improperly.

Open items Only those transactions that remain unpaid remain in the customer's account. Subsequent cash receipts and adjustments must be applied to a specific invoice and the invoice must be paid in full before it will be removed from the system.

Query-vendor feature Lets you review vendor information while entering accounts payable transactions.

Pre-check reports Concerns check writing. Reports that help identify accounts payable items that need to be paid.

as well as to preview the checks that will be created before the checks are actually printed.

Prior-year account history Information such as transactions, budgets, and month-end balances that applies to the accounting activities in the year that precedes the current accounting year. Prior-year amount Dollar amounts

posted to the chart of accounts in the year that precedes the current accounting vear.

Retainage percentage A percentage used to calculate the amount to be withheld from invoices when they are paid. A services contract often allows a company to retain part of the fees due (usually 10 percent) until the contract is completed. Reversing entries Entries made at the beginning of an accounting period to undo the effects of adjusting entries made in the prior period. Accrued items, such as income earned but not received, are reversed so that only the amount belonging to the current period will remain in an ac-

"Split-transaction" procedure Posting a single amount to one general ledger account while posting the other side of the transaction to multiple general ledger accounts. For example, many packages allow you to post an entire invoice amount to accounts payable and then post the other side of the entry to one or more expense accounts.

Sunk cost Costs incurred for an item that cannot be recovered even if the item is sold. The difference between the original cost and the amount received when it is sold is the sunk cost of owning the

Time-series financial analysis Analyzing historical information using statistical methods, such as regression analysis, to develop trends and comparative information.-Mike Falkner

Many of the packages we have reviewed here range from being suitable for use by a one-person consulting firm to "Fortune 100" companies.

PRICE TAGS AND dBASE Accounting consultants are most often asked two fundamental and important questions: "How do I distinguish between accounting sys-

tems?" and "What features and functions do I require?" There are often significant differences

in the features and functions you receive PC MAGAZINE . SEPTEMBER 15, 1987

OUR REVIEWERS

Mary Ellen Andersen is a consultant with the Price Waterhouse Management Consulting Services group in the company's Los Angeles office.

Margaret Balochko is a senior consultant with Price Waterhouse in the company's Pittsburgh office. Christopher Barr is the manager of the

PC Magazine Interactive Reader Service.

Claude Bartel is a principal of Bartel

Claude Bartel is a principal of Bartel Associates, a financial/microcomputer consulting firm based in Westport, Connecticut.

Harold Berry is a consultant in Cupertino, California, specializing in the selection and installation of microcomputer accounting systems.

Michael L. Brown is a manager of Weinberg & Wilfong, Certified Public Accountants, and of Management by Micro—both in Rockville, Maryland. Brian D. Callow is a senior consultant

with the Price Waterhouse Services group in Calgary, Alberta, Canada. Mike Calyniuk is a senior manager with the Price Waterhouse Micro Computer Consulting Services group in Vancou-

ver, British Columbia, Canada.

John Cashdollar is a senior consultant
with the Management Consulting Services department of Pfanner & Tate in

Sacramento, California.

Jeffrey Cohen is a manager for Applied
Business Systems, a Bethesda, Maryland, value added reseller of accounting

software.

Terri C. Connor is a senior consultant with Price Waterhouse in the company's Chicago office.

Dave R. Coulombe is a senior consultant with Price Waterhouse in Edmonton, Alberta, Canada.

Susan Davis is vice president of the

Stemp Group, a New York consulting firm specializing in accounting software. Mike Falkner, an independent microcomputer consultant in Orangevale, California, has previously reviewed accounting neckages for Price Waterhouse

in the company's Sacramento, California, office.

Patrick Fitzhenry is a Price Waterhouse Management Consulting Services man-

Management Consulting Services manager in the company's Sacramento, California, office.

Michael Friedlander is a consultant in accounting and administrative software in Westchester, New York, where he is active in the Westchester PC User Group.

Harold C. Gellis is a Professor of Accounting and Taxation at York College of the City University of New York (CUNY). He is a member of the New York State Society Committee on Tax and Computer Use and Data Processing. Steve Gentino operates PC Services, an accounting consulting firm in the Washington, D.C., area. He is active in the Capital PC User Group.

Capital Pc Oser Ortoup.

Wayne Harding, an accountant and consultant in Denver, is an active member of the Colorado Society of Certified Public Accountants and the American Institute of Certified Public Accountants. Kenneth J. Hilly is president of Horizon Micro Systems an accounting micro.

Micro Systems, an accounting microcomputer consulting firm in Hudson, Ohio.

Leo Lefkowits is an independent business systems consultant in Houston. Peter Loppe is a consultant with Price Waterhouse in Vancouver, British Columbia, Canada.

Jacqueline Masloff is a microcomputer consultant in Boston. Marianne L. Meyers is an accounting

ing programs on the market. For this arti-

services consultant. She had previously worked for the "Big Eight" accounting firm Ernst & Whinney.

Thomas A. Meyers is director of internal audit for a large insurance company. He had previously worked for the "Big Eight" accounting firm Emst & Whin-

Patrick Nicholas, based in New York City, is a free-lance writer who frequently writes on computer-related topics.

Robert E. Ogle is a partner in the Houston office of Oppenheim, Appel, Dixon & Co., an international accounting firm. He is an active member of the American Institute of Certified Public Accountants and the Texas Society of Certified Public Accountants

Gail Horowitz Rosen is president of an accounting consulting firm in Watchung, New Jersey, that specializes in accounting services and tax preparation.

ing services and tax preparation.

Jay A. Rosen is an independent microcomputer consultant based in Watchung,
New Jersey.

Brent V. Shirley, a microcomputer consultant in Vancouver, British Columbia, Canada, had previously worked as a senior manager with Price Waterhouse.

nior manager with Price Waterhouse. Gene Smilgiewicz is president of UBM Corp. in New York City, a consulting firm specializing in database and network applications.

John Somoza is a tax accountant practicing in New York City. Morris W. Stemp is president of the

Stemp Group, a New York firm specializing in accounting software.

William H. Stewart is a principal with

William H. Stewart is a principal with the accounting firm of Price & Paige, in Clovis, California.

Randall Swearingen is the owner of Swearingen Software, a microcomputer consulting firm in Houston. He is an ac-

for your purchase price. The accounting software packages reviewed here are categorized into three groups; low priced, high priced, and packages that work with dBASE.

There are literally hundreds of account-

cle we focused on those that met three criteria: The companies had to have been in business for over a year and had to have had sales of more than 100 packages a year. (We used market research firms for

information on package sales.) Third, the software companies had to be listed in indexes of independent software programs such as Datapro and ICP Data Sources. A properly designed automated financial reporting system can be the key to bet-

tive member of the Independent Computer Consultants Association.

Shelby T. Thiessen is a microcomputer consultant with Price Waterhouse in Vancouver, British Columbia, Canada. Rex M. Vincent is a member of the Management Consulting Services department of Pisenti & Brinker, an accounting firm located in Santa Rosa, California

Allyn S. Vineberg, a former manager in the New York office of the "Big Eight" accounting firm Ernst & Whinney, is currently a partner in the New Yorkbased consulting firm Advantage Busi-

ness Systems.

Charles Weinberg is a principal of Weinberg & Wilfong, Certified Public Accountants, and of Management by Micro, both in Rockville, Maryland. He is an officer of the Capital PC User Group

in Washington, D.C.

Kenneth H. Werner is the founder and owner of a Houston information consult-

Jeffrey Williams is a senior consultant with the Price Waterhouse Management Consulting Services group in the company's Sacramento, California, office. William Winberg is an internal auditor and microcomputer consultant based in

ing firm.

Springfield, İllinois. He is an active member of the Illinois Society of Certified Public Accountants and the Illinois Institute of Internal Auditors. Oliver L. Wright is a microcomputer systems consultant based in Santa Cruz,

California.

John J. Xenakis is president of Xenakis
Consulting Service, a microcomputer
consulting firm in Framingham, Massa-

consulting firm in Framingham, Massachusetts. He is software editor of Computer Update Magazine, published by the Boston Computer Society.

ter cash flow management and growth within your company. It provides an accurate barometer of your current situation and helps you minimize cash flow risk. By standardizing the handling of payables and receivables, you can learn much sooner if

you'll need to borrow money or if you'll have excess funds to invest. You may also find you have better access to credit. By generating more of your necessary reports in greater detail, you can give potential lenders greater confidence in your company's overall credit worthiness.

ny Soveral retus wortuness: By producing more accurate, timely, and comprehensive information at a cheaper cost, an automated accounting system can hely you maintaine taxes, inment, perform tales analyses to design better marketing programs, and improve management through the use of profit andloss statements, cash flow projections, and break-even analyses.

Compared with time-sharing plans, service bureaus, or manual systems, an automated system of your own:

- gives you better controls,
 gives you better access to data and
- helps you set priorities,

 allows greater data security,
- allows greater data security,
 improves clerical productivity,
- reduces administrative costs,
 stabilizes cost as volume increases,
- improves professional quality, and
 integrates with other software to per-

form decision analysis.

However, for most businesses, it is
wise to continue using service bureaus for
large and complex tasks such as payroll.
(See the sidebar "Building a Successful
System.")

THE MULTIUSER ROUTE Executing transactions and recording them in an organized way often involves many people. Multiuser and network systems are growing more important as the need for data sharing, resource sharing, and data management increases. Once you select the basic features of a system, as we did in our evaluations of single-user packages, finding a package that can implement these features in a multiuser environment is straightforward. However, because of cost and complexity, you may require outside assistance to define requirements, do economic feasibility analyses, prepare a Request for Proposal (RFP), analyze RFP responses, help negotiate the hardware and software contracts, and assist in implementation and testing.

In the sidebar "Cashing In on the Net-

works," PC Magazine contributing editor Frank J. Derfler, Jr., discusses what questions to consider if you install and implement a multiuser system.

PROVERBIAL CAVEATS Automated accounting systems can help an organization compete and succeed. However, there are things the system won't do: it won't make decisions for you, improve poor judgment, or eliminate jobs.

Automated accounting systems can help an organization compete

and succeed—it won't make decisions for you, improve poor judgment, or eliminate jobs.

Most business people realize that an automated accounting system will not replace a bookkeeper. Those who have implemented automated systems have learned that they can make more effective use of their accounting staff by having them manage receivables and payables in ways that improve profit. The manager with an automated system may decide to perform more sales analyses and undertake more marketing initiatives for select customers by tracking and examining their past purchases. Once the system automates repetitive tasks, people are able to turn their attention to more challenging and satisfying work. We don't see jobs being eliminated-we see them being changed for the better .- G. William Dauphinais and Timothy J. Lee

G. William Dauphinais and Timothy J. Lee are, respectively, management consulting services partner and management consulting services coordinator for Price Waterhouse.

Maybe it's not what you're saying that's so dull.

NEW DIRECTIONS

MOST PROFITABLE ROUTES

Funny thing about business communications. You may have some perfectly brilliant ideas, but if the way you present them lacks impact, your audience may never get your message.

So how do you make your presentations, proposals, and memos look brilliant?

With graphics. Specifically, with Lotus Freelance Plus.

Using Freelance Plus, you can communicate more quickly, thoroughly and effectively. And Freelance Plus is versatile and easy to learn.

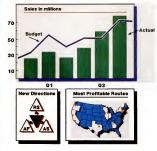
The applications are virtually limitless—everything from charts to bulleted lists, organization charts, maps, diagrams, drawings, and more. And while Freelance Plus can help you create simple

graphs very quickly, it gives you the power to develop even more sophisticated graphics as well. Freelance Plus works with your

IBM PC and is compatible with your existing software. So you can use it to embellish charts from Lotus 1-2-3, Symphony or Graphwriter with, for instance, symbols, diagrams, and comments. Also, Freelance Plus works

Maybe it's just how you're saying it.

Horizon Airlines





You can easily incorporate changes as they occur, in charts, rrams and drawings.

with dBase® and standard ASCII text files.

With Freelance Plus you can mix different types of graphics on a page. Or, you can mix graphics and text on the page, when you use Freelance Plus along with the document processor Lotus Manuscript*

Freelance Plus is as versatile a graphics tool as is available

today. So even if the ideas in your business communications are brilliant. Freelance Plus will help insure that the rest of the world sees them that way.

Your next brilliant idea should be to take advantage of our free Freelance Plus demo kit. To order, simply call 1-800-345-1043 and request demo

kit QS-3092.



Lotus Freelance Plus

IBM PERSONAL SYSTEM/2 TAPE BACKUP... ANOTHER FIRST FROM MOUNTAIN.

Mountain Computer delivers again by manufacturing the lirst trape backup system for the new IBM* Personal System 2° computers (Models 30, 30 & 60). These are the same reliable high-performance drives backing up the IBM XIT- ATP* and most compatibles. And all come network-ready.

Mountain's new low-cost FileSafe* Tape Series 4000 is the first to incorporate the new industry standard QIC 40 hardware and QIC 109 software (which we helped develop) that now make high-performance tape backup not only highly reliable—but easily affordable.

INTERNAL AND EXTERNAL: 40MB.

The FileSche Series 4000 (smily delivers 40-megabytes, formatied, in one internal and two zero-footprint external configurations. Featuring advanced automatic error correction code for unportalleder rehisbility, it lets you secure and transport your data in inexpensive, pocket sized

All versions include Mountain's latest generation of powerful, automatic and exsy-to-use menu-driven tape backup software that is relied on daily by thousands of professional, business and government systems users worldwide.

ONE-YEAR WARRANTY IS STANDARD.

As a leading innovator in tape backup for desktop computers, Mountain backs the Series 4000 with a 12-month limited warranty featuring "Ready Replacement" within the first six months, and our 10-year track record of responsive support.

RELIABLE BACKUP YOU CAN AFFORD.

The race for first is over. Ask for Mountain's affordable FileSafe Tape Series 4000 at leading computer stores everywhere. Call or write today for more information and the name of your nearest Mountain dealer.



Mountain Computer, Inc., 368 El Paeblo Roc Scotts Valley, CA, 55066, (408) 438-6550, TWX 910-598-4504, FAX 408-438-7823. Mountain products are distributed and sold worldwide. Call or write for the name of the

*registered trademarks and *trademarks of Mountain Computer, Inc. and International Business Machines Core



Economy-Class Auditors

Imost all of these packages cost less than \$125 per module, and many offer a complete set of modules for less than \$250. Companies that may eventually migrate to a larger multiuser system may want to begin with a smaller software investment to develop the procedures and prove the worth of a computerized accounting system.

These packages differ from their higher-priced brethren in features and functions. Most notably, they rarely offer multiuser versions. Their charts of accounts do not easily accommodate organizations with many departments or divisions. Their ability to track product costs is often limited. On-screen lookup of field values (such as vendor names) often is not available. Customization, typically, is not an option, and the packages are often unable to import transactions from other systems. Very often, too, training and support is not as extensive as with higher-priced packages. But the argument can be made that, with good documentation and an easy-to-use system, there is less need for training and support. The better packages help you manage your payables and receivables and do the necessary reconciliations.

Due Easy Accounting, which originally sold as 599.93 and included General Ledger, Accounts Receivable, and Accounts Payable, dominated this end of the market soon after it was released in 1985. Other vendors saw the low-pricohigh-volume equation and began to follow. Feechree vendors are the president of the complete accounting series, which complete accounting series, which originally sold for \$4.700, and offered it at a new retail price of \$199. Two packages reviewed here were developed in Lotages.

1-2-3: FrontRunner's CPA+ and Manusoft's Ready-to-Run Accounting.

Initially, many of these packages were geared to small businesses with basic bookkeeping and accounting needs. They gave users an inexpensive introduction to automated accounting. Now the second wave has begun: vendors committed to this market have developed new software releases that offer improved flexibility, documentation, ease of use, ability to extract data, and other modules. The range of companies they can serve has been growing. Many have added inventory modules and are developing job cost modules that can be used by small manufacturers, contractors, or even service professionals.-Timothy J. Lee

Accounting for Micros

The James River Group, a 4-year-old Minneapolis-based software company, originally wrote Accounting for Micros on CP/M-based systems and translated the package to run under DOS.

Accounting for Micros is sold as individual modules that can be integrated. Documentation for each module is typical of that supplied for the General Ledger—just 33 pages—but it is well assembled and can guide any user through implementation.

The modules contain no parameters, options, or report writers. The General Ledger gives you a basic balance sheet and income statement in one format but does not provide for multiple companies, departments, and subaccounts, or for a gen-



eral ledger or trial balance report. This makes the program suitable for small businesses with simple needs but could pose problems for large companies with many departments.

Installation is straightforward. Hardware configuration is entered easily, and the programs are easily copied to a hard disk. Setting up information about the company is also easy.

Start programs in the General Ledger, Accounts Payable, and Accounts Receivable modules guide you through the initial housekeeping chores of setting up accounts, customers, and vendors. Initial general ledger balances can be loaded with year-to-date, budget, and last-year balances by the month.

Setting up the General Ledger chart of accounts requires some care. You can en-



Accounting for Micros' accounts payable voucher input system uses the file's key, and the screen shows the data used during input.

ACCOUNTING

ter opening balances at the same time that you enter the account description. The accounts must be numbered between 1 and 2,000 and identified by type. The type designation determines how the accounts is classified on the financial statement. There is no provision for multiple company codes, departments, or subseccounts, identical numbers for different accounts are accounts are accounts and the subseccious of the subseccious and the subseccious and the subseccious accounts are accounts and the subseccious and the subseccious accounts and the subseccious accounts are accounts and the subseccious accounts and the subseccious accounts are accounts and the subseccious accounts and the subseccious accounts and the subseccious accounts accounts accounts and the subseccious accounts accounts accounts accounts accounts account account account accounts account accounts account accounts acco

FINANCIAL STATEMENTS Formatting financial statements is easy because you have no options. Journal entries and cash disbursements are also quick and sinple to input and to post to the General Ledger. However, the presentation of the financial statements does not comply with generally accepted accounting principles (GAAP standards).

Thirteen pages of basic accounting instructions in an appendix to the documentation provide useful information for the beginning bookkeeper.

The program offers only a small number of reports, although others can be had from utilities supplied in the Business Tool Box Series.

Accounts Payable and Accounts Recivable use the customer/wendor name instead of an account number. This is easy to use for a small number of accounts but would be cumbersome if you had many. A misspelling would leave you unable to locate an account. If a mistake is made during input, the entire record must be reinputted; you cannot change just a portion of an incorrect entry.

Accounts Payable gives you four formats for invoices and a flexible system for modifying them. Each voucher to be paid must be identified and selected for payment manually that is, by you) rather than being selected by the computer according to due dates or amounts. The manual selection process can be a very time-consuming activity.

Both the Accounts Receivable and the Accounts Payable interface with the General Ledger, and a chart of accounts validity check is made by the system. However, new accounts must be entered into all three modules, or posting errors will occur.

Accounting for Micros is easy to install, operate, and maintain. The James River Group offers excellent support, an inexpensive maintenance option, and a useful mewsletter with ideas and helpful hims. Accounting for Micros would be useful for a small business, but it sabilities are limited. The addition of a partner, creation of a department, or acquisition of another company could necessitate its replacement.—Robert E. Ogle

The Accounting Partner

Hundreds of PC accounting packages today range in price from under \$100 to over \$10,000. The Accounting Partner (TAP), from Star Monogram, lists for \$99, and it's worth it.

Don't expect sophisticated reports. Don't expect secure audit trails. Don't expect built-in backup routines or the ability to export data files to any other system. You can expect, however, to enter a small volume of limited transactions and to produce basic financial reports with a minimum of effort and trainine.

Installing The Accounting Partner is a completely menu-driven process. You need a password to set up the data files initially, but not to operate the system.

The system itself is also menu driven, with easy-to-understand menus and standard conventions throughout. Entering the chart of accounts, vendor master, and customer master requires more effort and time than should be necessary, though, because of all the yes and no responses required for each entry. Although this tedious proce-



dure should not be a significant problem considering the low volume of transaction data for which the system is recommended, it can be bothersome during the initial setup.

Editing is also designed for clarity rather than for ease of entry. If you want to change a field, The Accounting Partner sets up a temporary work area next to the old value so that you can see what you are replacing as you replace it. But you cannot edit a long field. Instead, you must replace the entire data element.

If you must enter data for a new account (general ledger, customer, or vendor), you cannot add that account during transaction entry. Rather, you must exit that part of the system, enter the master file update, add



The Accounting Partner shows you when your transaction is out of balance. It also lets you enter a description that is printed on the check.

nyone and everyone who routinely works with equations needs **Eureka: The Solver**

It solves the most complex equations in seconds. Whether you're a scientist. engineer, financial analyst. student, teacher, or some other professional, you need Eureka: The Solver!

Any problem that can be expressed as a linear or non-linear equation can be solved with Eureka. Algebra, Trigonometry and Calculus

problems are a snap. Eureka: The Solver also handles maximization and minimization problems, does plot functions, generates reports, and saves you an incredible amount of time.

X+exp(X) = 10solved instantly instead of eventually!

Imagine you have to "solve for X," where $X + \exp(X) = 10$, and you don't have Eureka: The Solver. What you do have is a problem, because it's going to take a lot of time quessing at "X." Maybe your quesses get closer and closer to the right answer, but it's also getting closer and closer to midnight and you're doing it the hard way.

With Eureka: The Solver, there's no guessing, no dancing in the darkyou get the right answer, right now. (PS: X = 2.0705799, and Eureka solved that one in .4 of a second()

System require IBM PC, AT, XT, PS/2, Portable, 3270 or true co-bles. PC-DOS (MS-DOS) 2.0 and later 384K



- 1 Enter your equation into the full-screen editor
- 2. Select the "Solve" command ? Look at the answer
- 4. You're done
- You can then tell Eureka to
- Evaluate your solution Plot a graph
- Generate a report, then send the output to your printer, disk file or screen
- Or all of the above

Eureka: The Solver includes

- A full-screen editor ✓ Pull-down menus
- On-screen calculator
- Automatic 8087 math co-processor chip support
- Powerful financial functions Built-in and user-defined
- math and financial functions Ability to generate reports
- complete with plots and lists Polynomial finder
- Inequality solutions

Some of Eureka's kev features

You can key in: M A formula or formulas A series of equations—and

solve for all variables Constraints (like X has to be < or = 21

- A function to plot Unit conversions
- Maximization and minimization problems
- ✓ Interest Rate/Present Value calculations
 - Variables we call "What happens?," like "What happens if I change this variable to 21 and that variable to 277"

All this power for only \$167.00!

Equation-solving used to be a mainframe problem, but we've solved that problem. Eureka: The Solver is all you

need—and it's yours for only \$167,001 That kind of savings you can calculate with your fingers!





SCOTTS WHIFY ON BRIDGE MORE ARRANGE TRIFY 172222

CIRCLE 137 ON READER SERVICE CARD

For the dealer nearest you or to order by phone call (800)255-8008

in CA (800) 742-1133 in Canada (800) 237-1136

BI-1102C

the account, reenter transaction entry, and then add the transaction.

MEMORY AID Accounts Receivable and Accounts Payable are almost exactly alike. A noticeable difference, however, is that with Accounts Receivable you can have one field default to duplicate the entry from a previous field. In both modules, if you cannot remember a customer or vendor number, you can simply enter the name and The Accounting Partner will retrieve the appropriate account-probably its most user-friendly aspect.

Accounts Receivable accepts invoices to increase customer balances and payments, and credit memos to decrease them. Accounts Payable increases vendor balances through invoices and decreases them with payments and debit memos. If you want to increase a customer (vendor) invoice through a debit (credit) memo, you must enter another invoice instead of a

memo transaction. In General Ledger, journal entries are restricted. The same voucher cannot include multiple debits and credits. The first entry can be either a debit or a credit, but all subsequent ones must be the opposite. Thus, if you have a voucher with multiple debits and multiple credits, you must use two unbalanced vouchers to create the one balanced youcher.

LIMITED REPORTS The Accounting Partner's reporting capabilities are also limited. Accounts Payable does not print checks but rather produces worksheets that you can use to determine how much you wish to pay to each vendor. This method gives you maximum flexibility regarding payments, but at the cost of reduced automation. Of course, a low-volume operation might prefer to use the worksheet method

The Accounting Partner maintains all customer and vendor accounts on the balance-forward basis, limiting the information on file, as well as your flexibility to pay selected invoices. You cannot preview reports on the screen before printing them.

The Accounting Partner's documentation is poorly organized, and the limited index makes finding answers to specific questions a chore.

If you have plans for business growth,

you'll want to be wary of The Accounting Partner's lack of flexibility. But if your accounting needs and your experience are limited and your business volume is small, The Accounting Partner is a basic bargain.-Leo Lefkowits

Acctg1 Series

For just \$99.50, Cougar Mountain Software will send you the Acctel Series General Ledger, Accounts Payable, Accounts

Receivable, Order Entry, Inventory, and Payroll software. But don't be fooled by the price: Acctg1 is serious accounting software.

The Acctg1 Series is designed to allow for multiple companies. You use the system installation menu to define each company, and the application installation menu helps you define the modules each company will use. You define the passwords at the application level. The last step before setting up each module is to define the fiscal calendar of each company. The fiscal calendar can have up to 13 user-defined periods. Acctel is date sensitive and

automatically posts to the right accounting

period.

To set up the General Ledger, you enter the chart of accounts, define the interface for transactions created in Accounts Receivable, and create report formats. Entering the chart of accounts is fast and easy. Account numbers are user defined, with up to a maximum of 15 alphanumeric characters. Acctel can track monthly budget and prior-year comparative numbers for each account, but you can set up only bud-





Cougar Mountain Software 2609 Kootenai P.O. Box 6886 Boise, ID 83707 (800) 344-2540 (208) 344-2540

List Price: \$99.50. Also available: Job Cost. \$199.50; multiuser version. Requires: 256K RAM; hard disk; DOS 2.0 or later In Short: An inexpensive though serious ac-

counting package that's powerful and flexible but somewhat difficult to master. Not copy protected.

CIRCLE 682 ON READER SERMOE CARD

gets while loading the chart of accounts. Die-hard accountants will love the hash totals the Acctal Series calculates for the general ledger account and date. The system uses hash totals to verify the accuracy of the transaction data you enter.

STRENGTH AND WEAKNESS Acctgl's financial report is a major strength and weakness at the same time. It can generate just about any financial statement design. Powerful and flexible, it can also be extremely difficult to master.

The Accounts Payable module setup is smooth and simple. The Acctal Series processes accounts payable invoices by batch, so you have to create a batch number and assign your name to the batch before entering invoices. Small businesses may find this requirement annoying.

AP Invoice Maintenance Enter Line Number to Change S . I ald Note Betail fore BM 11/81/87 Vendor Number Vencher Number Immice Sumber TALL CITEX FIFEBURES 0 Homber for Date Coted | 1 800 Box Date Doys . 16 Box Date ... 12/81/87 Economic Rate PM / roice Bate. mediate Check SIR eterates ... \$250 M GL Transact Services 1 4818 181 Fress (SAVE) or (CANCEL) 3.2.23

Accte1 Series lets you distribute an invoice in the general ledger accounts. The number at the bottom right references further information in the user manual

Introducing the COLORSCAN/2



Color Graphics Workstation

If the success of your business depends on making faster, better informed decisions, then the COLORSCAN/2 workstation is designed for you.

Packaged all in one space saving 10" x 15" low profile enclosure, the COLORSCAN/2 leatures both a built-in plug-compatible VT™240 text/graphics terminal and a high-performance "next generation" PC/MS-DOS® personal system.

Starting at around \$2,000;* the COLORSCAN/2 offers many technological advancements that work to your advantage in many innovative ways. For example:

- High-performance VT240 and EGA compatible graphics
- Oulet, diskless networking operation
 "Smart card" and 31/2-inch disk accessories
- Surface mount technology and custom VLSI
- Auxiliary battery-backed RAM
- Choice of Personal System/2™ or VT200-style keyboard

With its dual capability and high connectivity, you can access on-line information from a VAX^{***} system or other time sharing systems while simultaneously running PC/MS-DOS applications such as Lotus® 1-2-3° By simply pressing a "hot key", you can switch back and forth from MS-DOS to the VT240 terminal sessions. And a "cut and paste" leature lets you extract and manipulate information between the two.

To find out more about how the COLORSCAN/2 can satisfy your needs, call Datamedia at 1-800 DMC-INFO.



11 Trafalgar Square, Nashua, NH 03063 CIRCLE 258 ON READER SERVICE CARD

of on manufacturer's suggested resid price. Desire price may vary Price excludes taxes, license, fleight or options. COLORISCAN is a registered trademark of Dutamedia Corporation. V7 and VAX are trademarks of it Equipment Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Personal System v7 as intermational Business Marchines. Lossu and 1 2-3 are registered trademarks of Lossu Development Corporation. You can use one of the preformatted check designs or design up to nine check formats. The Acctgl Series can distribute an invoice to up to 250 general ledger expense accounts. You can enter each line item in the distribution as a direct expense, prepaid expense, or future liability. Acctgl automatically posts to the General Ledger during the invoice posting.

Act; I's method of selecting invoices for paymen could be better. You have to print a Cash Requirements report for a range of vendors and say yes to create transactions. If you want to defer a selection invoice, you have to use the Accounts Payable Transaction Maintenance function to delete the payment transactions. Similarly, if you want to pay invoices that were not identified on the Cash Requirements report, you have to add a payment

Accounts Receivable is by far the hardset of the three modules to set up. The Acceff Jesries uses Accounts Receivable Codes to Identify different types of Accounts Receivable customers. It uses control to the Code of the Code of the minimum of seven to define customer charges, payments received, finance charges, payments received, finance charges, and so forth. Acceff uses a combination of Accounts Receivable codes and Transaction codes to map outsomer Ladger. The system does this mapping in the General Ledger interface table

Setting up the interface table for even the simplest business is difficult, especially if your business uses multiple sales accounts to capture sales by product category and/or customer type. On the plus side, Acctg/ allows you to define up to nine different sattement formats, or you can use the preformatted customer statement.

The Acteff Series menu structure is quite good, but some of the menu option names could be better. The system makes good use of the function keys. Uniforunately though, Acteff Cannot perform or enseme lookups. For example, if you screen lookups. For example, if you red out of lack. The Acteff Series in a series accounting package with features that belie its low cost, difficult to set up and sometimes awkward to set. Page 1871.

Bedford Integrated Accounting

Bedford Integrated Accounting is proof that it's possible to design a simple, effective PC accounting program that most people can use—with little previous accounting and computer knowledge. The \$249 package, from Bedford Software Corp., consists of General Ledger, Accounts Psyable, Accounts Receivable, Inventory, Job Cost, and Parvoll modules.

The package includes the Accounting Manual, a user guide, a foldout menu hierarchy reference chart, and a program disk (in either 3½-inch or 5½-inch format). The Accounting Manual devotes special attention to the needs of users who know nothing about accounting or bookkeeping; the user guide has clear, concise installation instructions and a nutorial.

A menu bar across the top of the screen displays the six easy-to-use accounting modules and a system module. You use the cursor keys and the Esc key to quickly select, enter, and leave any module.

To set up accounts in Bedford, you first use the not-ready mode to enter data for the master files, unrestricted by error-checking routines and other controls. Then you convert the relevant modules to the ready mode to begin processing daily transactions. The entire process is quick and easy, You can also use the modules independently, which avoids setting up and converting all the modules.

When converting to the ready mode,



the program checks the master file data and account balances to ensure that all accounts are balanced. If they are not, error messages are displayed.

EXPECTED LIMITS Beford has some limits, as you'd expect in a simplified accounting system. You cannot exceed 500 General Ledger accounts (Imited to accounts in each of the five General Ledger actegories: sussets, isiabilities, equity, revenue, and expenses). The maximum unmber of customers, suppliers, employees, inventory items, and jobs that each of the other modules supports is 99°. The number of invoices, cash receipts, cash programman store depends on the available disk space. You can create additional space by purping transaction details from



Bedford Integrated Accounting lets you scroll through available accounts to select the correct account for the transaction.

IT'S NEW, COMPATIBLE, EXPANDABLE, PORTABLE AND EVEN INCLUDES COLOR GRAPHICS.



i's a unique, up-to-date reference series on computing unlike ony other. It's compatible with ony micro, mini, moinfrome or supercomputer you use, own, or moy buy in the future. I'S LINDERSTANDING COMPLITERS from TiME-LIFE BOOKS.

A NEW AND BETTER WAY TO PRESENT COMPUTERS.

UNDERSTANDING COMPUTERS is designed, written and illustrated especially to help you learn a lot more about camputers and computing, no matter what your level of experience is now. Each valume of UNDERSTANDING COMPUTERS takes you in intensive, inside tour of a different aspect of computing in ploin English. Full-color grophics, including artwork

designed exclusively for this series, clarify every concept. So you enhance your knowledge and confidence, and go beyond the ABCs to the XYZs of topics like peripherals, programming

languages, software and graphics. For example, Computer Basics, your first volume, explains why most camputer operations are based on only two led by compl decisions: True or Folse, And then goes ware, robot fingers on to cover such topics as chip design

arip on egg with and how logic gates work. Software reveals how translators, utilities, memory mapping and languages are used in a programmer taalbax. Computer Images discusses the

secrets of creating spectacular graphics.

These volumes and others in the Each valume is a big 91/4" x 11 1/4" hard book with approximately 128 pages.

series, give you on encyclopedic knowledge of computing. Far more than you can get from any single source. TAKE A 10-DAY LOOK

WITH MO OBLIGATION TO BUY.

Examine Computer Basics free for 10 days. If you keep it, pay only \$14.99 (\$18.99 in Canada), plus shipping and handling. Every other month you'll receive another volume, also on a free 10-day triol. Keep only the ones you want. And you can cancel anytime. Or return Computer Basics and owe nathing. Mail the reply card or coupon now

An 8-processor chia for a "non-Von" computer Actual size at right

E 1987 Time Life Books Richmond, VA _____ START HERE WITH COMPLITED PACICO

1	ff card is missing, mail this cou TIME-LIFE BOOKS Box C-32066, Richmand, VA 2 YES Send me Computer Bases, a UNDRISTANDING COMPUTER	23261-2066
	outlined in this ad.	D1
100	None	
	Address	

Cry
Store or Zeror
Prince Publicode
All orders subject to approval. Price subject to change

UNDERSTANDING COMPUTERS

the program periodically. Also, the program limits the size of total dollar amounts to \$9,999,999.99

The Accounts Payable and Accounts Receivable modules are simple yet practical subledgers. They don't track due dates or calculate interest charges or supplier discounts. They use only an open-item basis for tracking invoices and offer only standard formats for checks, invoices, and statements

General Ledger financial reports, the year-to-date trial balance (with comparatives), the balance sheet, and the income statement (without comparatives) are in standard fixed formats. Bedford does not have a separate report writer feature, but you can produce standard reports covering a specified period of time within the current fiscal year.

The program can convert all reports to WKS (Lotus's 1-2-3), .DIF, or ASCII format. You can export standard reports using the various export formats and modify them to fit your needs and style. The 1-2-3 conversion utility even sets up Lotus formulas (for example, @SUM) in the

.WKS file.

Bedford's data entry menus give you access to master file information, using context-sensitive screens. One handy display is the calendar feature that you can access when the program prompts for specific dates. The similar features that supply account numbers, customer/vendor numbers, project lists, and other information can increase your accuracy and reduce data entry time.

Regular program enhancements continue to solidify Bedford's position as one of the better low-end accounting packages. One weakness that the program developers should address in a future release is that you must print of all journal entries before or when you purge transactions from the system.

Bedford Integrated Accounting gives users with limited bookkeeping knowledge the ability to make the switch to an integrated automated bookkeeping system easily-without the usual frustration and anxiety-and at a reasonable price. A surprising bonus in the program is the capable, easy-to-use export interface.-Mike Calvniuk, Peter Loppe, and Shelby T. Thiessen

Business Accountant

Business Accountant is designed for the small-business owner who wants to keep the books on a computer but does not know a great deal about either computers or accounting. Marketed by Decision Support Software for \$150, the system achieves its objective through the unusual setup of its software and the detail in its documenta-

tion First, some obvious restrictions: Business Accountant has no accounts payable or accounts receivable modules, although some neat features perform related functions that will more than suffice for many users. General Ledger account codes can accommodate only six digits; however, you can define groups of accounts to report balances and budget figures for these groups, and you can specify a departmental code with each transaction

Setting up Business Accountant is easy and straightforward. You can modify the sample chart of accounts or start with your own. The documentation gives a lot of attention to the types of accounts you are going to need; the average person should be able to set up a pretty good chart of accounts without requiring the help of an accountant. The documentation also contains detailed instructions and examples for entering the kinds of transactions that a small-business owner, perhaps with some financial investments, is likely to need in the course of his bookkeeping.

For each transaction, you specify a transaction amount as well as the codes of the accounts to be debited and credited. A



special "split-transaction" procedure is possible: you can split either the debit or the credit amount among two or more accounts. Another procedure allows you to specify up to nine recurring transactions, which you can request for posting at any time so that either the amount is always the same, or the amount is specified at the time of posting. Unlike some more-sophisticated packages, Business Accountant adjusts the account balances immediately when you enter a new transaction, so you always know exactly how much is available.

One of the highlights of Business Accountant is its budgeting capability. When you request this function, the screen displays a matrix showing account codes down the side and months of the year across the top. You use the cursor keys to move around the matrix, just as you would



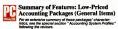
Accountant's budgeting module lets you move through a matrix of accounts and months as if it were a spreadsheet.

Summary of Features: Low-Priced Accounting Packages (Module Prices and Extras)

	Accounting for Micros	The Accounting Partner	Acety1 Series	Bedford integrated Accounting	Besidess Accommiss	The Company Books	CPA+	Dac Easy Accounting
Besic price*	\$325	\$99	\$99.50	\$249	\$150	\$150	\$199	\$69.95
General Ledger	\$125	Included	Included	Included	Included	Included	Included	Included
Accounts Payable	\$125	Included	Included	included	Included	Included	Included	Included
Accounts Receivable	\$125	Included	Included	Included	Included	Included	Included	Included
Payroll	\$125	Included	Included	Included	included	included	Included	0
Fixed Assets	0	0	0	0	0	0	0	0
nventory	\$125	0	0	Included	0	0	0	Included
Job Cost	0	0	\$199.50	Included	0	0	0	0
Materiale Management	0	0	0	0	0	0	0	0
Purchasing	0	0	0	0	0	0	0	Included
Report Writer	0	0	0	0	0	0	0	0
Seles/Order Entry	0	0	Included	0	0	Included	0	0
Sales Analysis	0	0	0	0	0	0	0	0
Time Billing	0	0	0	0	0	0	0	0
Network version	0	•		0	0	0	0	O
Networks supported:								
3Com Corp.	0	•		0	0	0	0	C
Novelling.	0	•	•	0	0	0	0	0
IBM Corp.	ō	•		0	Ö	0	0	O
Multiuser version	0	0		0	Ö	0	0	0

	Indian Ridge Accounting Software	LI'l Chief	One-Write Pice	Peochtree Complete Business Accounting System	Rags to Riches	Ready- to-Run Accepting	ReciWorld 4-in-1 Besic Accounting	Shoebus Acceptant	TAS Books
Basic price*	\$149.85	\$350	\$785	\$199	\$499.50	\$149.85	\$595	\$395	\$99
General Ledger	\$49.95	\$150	\$295	included	\$199.95	\$49.95	Included	Included	Included
Accounts Payable	\$49.95	\$150	\$245	Included	\$199.95	\$49.95	Included	Included	Included
Accounts Receivable	\$49.95	\$150	\$245	Included	\$199.95	\$49.95	Included	Included	Included
Payroll	\$49.95	NA	\$245	Included	NA	\$69.95	Included	Included	Included
Fixed Assets	N/A	N/A	NA	Included	NA	NA	N/A	N/A	N/A
Inventory	\$49.95	N/A	N/A	Included	N/A	\$69.95	NA	N/A	Included
Job Cost	N/A	N/A	N/A	Included	NA	N/A	N/A	N/A	N/A
Materiale Management	N/A	N/A	NA	NA	NA	N/A	N/A	N/A	N/A
Purchasing	N/A	N/A	NA	NA	N/A	N/A	N/A	N/A	N/A
Report Writer	N/A	N/A	NA	\$199	N/A	N/A	N/A	N/A	N/A
Sales/Order Entry	\$49.95	N/A	N/A	Included	N/A	Incl. in Inventory	N/A	N/A	N/A
Sales Analysie	N/A	N/A	N/A	NA	N/A	NA	N/A	N/A	N/A
Time Billing	N/A	N/A	NA	N/A	NA	N/A	N/A	N/A	N/A
Network version	0	0	0	0	0	0	0	0	
Networks supported:									
3Com Corp.	0	0	0	0	0	0	0	0	
Novell Inc.	0	0	0	0	0	0	0	0	
IBM Corp.	0	0	0	0	0	0	0	0	
Multiuser version	0	0	0	0	0	0	0	0	

■ ACCOUNTING



	Accounting for Micros	The Accounting Pariner	Acetg1 Series	Bedford Integrated Accounting	Business Accountant	The Company Books	CPA+
General Ledger							
Chart of accounts code size*	5 N	8 N	15 A	3 N	6 A	4 N, 30 A	5 N
Default account structure*	NNN	None	User defined	NNN	AAAAAA	User defined	NNNNN
lo. of predefined accounts	None	None	None	30	45	1,600	97
lo. of characters for entry description	24	25	40	34	39	250	72
rensection entry limit	\$9,999,999.99	\$16,770,000	\$9,999,999.99	\$9,999,999.99	\$10 million	\$99,999,999.9	9 \$100 million
accounting periods	12	13	13	1 to 365	12	13	99
io. of standard reports	7	13	5	6	6	45	15
ccounts Payable							
o. of characters for vendor code	5	8	15 A	999	None	4 N, 30 A	None
o, of characters for invoice entry description	19	25	15	7	None	250	None
lo. of standard reports	6	12	8	3	None	24	57
cocunts Receivable							
o. of characters for customer code	5	8	15 A	999	None	4 N. 30 A	None
o, of characters for salesperson code	8	3	3	None	None	4 N. 30 A	None
o, of characters for invoice entry description	40	20	15	26	None	250	None
o. of standard reports	7	13	5	4	None	24	46
Ship-to" address for customer		0		1	0	-	0
Bill-to" address for customer		•		ŏ	ŏ		~
			-				
nstallation and Setup	_	_	0	0	_	0	
scholes checklist	:	:	0	0	ō	0	ö
ncludes evistem operation procedures lists	:	:	•	0	_	0	9
iciodes system operation procedures lists	0	Ö	:	•	:	0	:
stimated installation time (hours:minutes)	030	1:20	0:10	0.05	1:30	0.02	0.05
omes with tutoriel	0.30	0	0:10	UXUS	1:30	0.02	0.05
cludes on-line, context-sensitive	0	0	0	Ö	:	0	:
cludes data entry forms	0	•	•	0	•	0	0
llows access to master files during data entry	•	•	0	•	•	•	•
lata Security and Access							
ndividual pesswords	0	•	0	•	0	•	0
asswords for individual modules	ō	•	•	•	ō	ō	•
asswords for Individual menu functions	0	•	0	0	Ó	0	0
irants menu-item access rights to user	0	0	0	•	0	0	0
nterface to Other Systems							
elects and extracts data in:							
DIF format	0		0	•	0	0	0
ASCII format			•		õ	0	
ther output formats supported	None	.SDF	None	1-2-3	1-2-3,	Text	None
oads master file data from other systems		0	•	0	Multiplan	0	0
oads transaction file data from other systems	0	Ö		ő	0	o	o

	Dec Easy Accounting	Indice Ridge Accounting Software	LI'l Chief and The Geldon Englis	One-Write	Peopletree Complete Secioess Accounting System	Regs to Rickes	Ready-to-Rue Accounting	ReelWorld 4-le-1 Spain Accounting	Shoebar Accountset	TAS Books
	6 A AAAAAA 1 24 \$00,990,900.90 12 7	6 A NNINN-NN None 30 \$10 million 12/13 7	12 A None 30 \$10 million 12 12	4 N NNNN 105 90 \$999,999,99 4, 12, 13 15	6 N NNNNNN 77 25 \$9,999,999.95 12 13	1 A NNNN 1,000 25	5 N NNNN 114 30	7 N AAAA-AAA 106 25	6 A AAAA AAAA 32 20	10 A NINNINNINNIN 84 25 \$999,990,999 99
	6A 24 5	5 17 14	12 A 24 10	6 None 20	6 16 18	1 250 9	4 25 7	25 25 12	4A 20 6	10 25 10
	6A 4 24 4	5 None 25 11	12 A None 24 11 O	6 3 0 33	6 None 10 14 O	1 None 250 7 O	4 None 25 5	25 3 150 11	4 A None 20 5 O	10 None 30 9
	0 0 0:05	0 030	0 0 0.15	0	0:15	0:02	0 0 0 10 0	0 0 0 0.30	• O O O O O O O O O O O O O O O O O O O	0020
_	0	•	0	o •	•	:	0	0	0	0
**.	0	0 0 0	0 0 0 0	•	•	0	0 0 0	•	0	•
er'l b	O O None	O • None	O O None	• • None	• • 1-2-3, SYLK	O O None	O • 1-2-3	O • None	O O None	• • None
	0	•	0	0	0	0	0	0	0	

Print Master lets people share printers







Non-buffered models from \$339. GSA pricing available.

Get the most out of your expensive resources – your people, your computers and your printers – with Print Master by BayTech. Not only does it let your people and computers share all of your printers, its buffer keeps them working instead of waiting.

Easy to set up, easy to use

Initial setup is menuprompted and allows you to configure Print Master to your application. You decide which ports are input and which are output. You also set such functions as baud rates, handshaking, timeout, how you select a printer, etc. After setup, you simply

atter setup, you samply cable Print Master between your computers and printers, and you're ready to go. BayTech's Memory Resident Program lets your PC users select printers via function keys that correspond to a menu window.



All users can send data simultaneously to Print Master's dynamically allocated buffer, keeping your people and computers working. This first-in-first-out buffer also sends data to all printers simultaneously to keep them running at full capacity. The buffer size? A big 512K that's expandable to one megabyte.

Eleven models with serial and parallel

An advantage of Print Master is its flexibility: Any port can be a computer port or a printer port. Choose from eleven models with different combinations of serial and parallel ports. Print Master internally converts serial to parallel and vice versa on combination serial/parallel models. Six ports, 8795. Eight ports, 8495. Ten ports, 8996.



Contact your dealer or Bay Technical Associates for information about Print Master and BayTech's complete line of data communications products, proudly made in the U.S.A.



BayTech

Bay Technical Associates, Inc.
Data Communications Products Division
200 N. Second St. P.O. Bax 387
Bay Saint Louis, Mississippi 39520
Teles 910-333-1618 BAYTECH
Phone 601-467-8231 or
800-523-2702



■ ACCOUNTING

move around a spreadsheet. You can fill in the budget values for each account for each month of the year, and the program automatically updates the totals by row (account) and by column (month). You can get up-to-date comparisons of budget versus actuals in either tabular or bar chart form.

WRITING CHECKS Although Business Accountant has no Accounts Payable module, its Check-Writing function has quite a bit of flexibility. You may specify that one or more General Ledger accounts are for checking accounts. Whenever you enter a transaction for such an account, the software will, if desired, write a check for the specified amount, printing it onto preprinted tractor-feed forms that you can order. The software automatically keeps track of the check number and increments it each time a check is written, although the software-generated check number can be overridden. In addition, Business Accountant can write checks not associated with a transaction and can define sets of checks to be printed automatically upon command.

Of course, Business Accountant tracks the current balance in all General Ledger accounts, but if the account is for a checking account or a credit card, it can also track which items have been cleared and which have not. The program can track two balances for such accounts: the amount according to your books and the amount on the bank's books.

Business Accountant has no report writer to allow you to define your own reports, but various options control the range and types of information you get in standard reports. Besides the standard reports, you can also get instantaneous reports showing current balances. No historical reports are available, since the software keeps figures only for the current year, throwing away last year's figures at year-end closeout. For more-complicated reporting tasks, you can use the export capability, which produces worksheets for 1-2-3, Multiplan, or Visi-Calc

Business Accountant even has a built-in desk calculator. In short, it's a fast, easyto-use bookkeeping software package-a good choice for the small-business owner who is not yet ready for a full-fledged accounting system.-John J. Xenakis

The Company Books

If you suffer from bookkeening stress. consider The Company Books, from Swiedler Information Systems. The \$150 program, complete with General Ledger, Accounts Receivable, and Accounts Pavable functions, is designed for small businesses whose owners or managers may be unfamiliar with sophisticated accounting and personal finance systems. But if you're an experienced accountant, you're likely to be disappointed with this program's slow select-the-unit-and-followthe-prompt form of bookkeeping.

The Company Books accommodates four journal types, up to three levels of accounts, three types of budgets, two resident account charts, long remarks, subordinate chart copies, customized reports. and consolidated reporting of subsidiary companies, as well as invoicing, check writing, and payroll. The program easily handles saving and restoring data and prompts you when it is time to back up data.

Setup and configuration procedures are straightforward. The setup procedure prompts you to insert the disk when needed, and a menu helps you configure the program for your hardware.

The program's consistent-looking interface is easy to use. The screen is divided into three areas, with the top half resembling part of a typical handwritten journal. The lower-right quarter gives the charts. and the lower-left quarter gives the instruction menus that walk you through the pro-





DOS 2.0 or later

Version 2.02 Swiedler Information Systems Inc. 8825 Roswell Rd., #592 Atlanta, GA 30350 (800) 542-6484 (404) 642-6484

List Price: \$150 Requires: 320K RAM; two disk drives;

In Short: A simple-to-use program for small businesses with a large number of features for its price; a simple select-the-unit-and-followthe-prompt form of bookkeeping. Not copy protected CIRCLE 664 ON READER SERVICE CARD

Selecting a menu instruction or a chart account is simple. You use the cursor keys to locate the desired item; then you press the Enter key to mark it. Displayed above lower- level menus are the menu instructions you select to reach the current menu depth. This setup permits you to retrace your steps visually.

You move back a step by depressing the Esc key if you change your mind, make a wrong selection, or enter data in error. Pressing Esc again undoes the preceding entry or selection.

SMALL OUIRKS None of the minor quirks I found were bothersome. A monthly and a yearly option and their invoked functions were reversed. Prompt text requested a ZIP code when it needed entry of a year. Requests for certain screen reports



The Company Books has an easy-to-read servers that is arranged in three areas. It includes a "ship-to" as well as a mailing address.

received a "Printer not ready" response.

The Company Books has one outside fault, thought he user manual. Although the manual contains 370 pages, divided into 12 chapters and five books, it does not adequately tell you what only an existing comindex, or untorial; and what could pass as a glossary is positioned near the back as the ninth chapter. Menu illustrations in the text are not headed with titles, and once are screen shots, making it difficult to distinted the country of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the prospection of the country of the country of the country of the prospection of the country of the country of the country of the prospection of the country of the country of the country of the prospection of the country of the country of the country of the prospection of the country of the country of the country of the prospection of the country of the country of the country of the prospection of the country of the country of the country of the prospection of the country
comprehension.

On the plus side, Swiedler's exemplary telephone support personnel are informed, patient, and courteous. The company sells the program in a one-month encrypted trial mode. If you're not satisfied at that time, it

refunds the purchase price.

The true potential of The Company Books will go unrealized until Swiedler corrects several inconsistencies and improves the user manual. But if you need a simple beginning accounting package with good vendor support, you'll find The Company Books entimently user-friendly and casty to use, despite the inadequate user manual. On the other lands, seasoned with its slow, beginner-oriented seed—Kemeth H. Werner

CPA+

CPA⁺, from FrontRunner Development Corp., is a relatively inexpensive add-on to what has become, for many small-business accountants, their stock-in-trade spreadsheet: Lotus's 1-2-3. The \$199 CPA⁺ is actually a well-designed series of 1-2-3 templates.

Because of the template format, installing CPA¹ and setting up a company is easy. First, you enter descriptive information (name, address, and so forth) and desginate the company type as service, retail, or manufacturing. This designation determines the format of statements available as standard reports. At this stage, you also define journal sizes (number of refuries) accooding to guidefines based our your PC's memory.



CPA*
FroarRunner
Development Corp.
14656 Oxnard St.
Van Nuys, Cx 91411
(800) 654-7494
(818) 376-1322
List Price: S199

Requires: 384K RAM; two disk drives or hard disk; Lotas's 1-2-3, Release 1A or 2.0; DOS 2.0 or later. In Short: An easy-to-use, menu-driven,

1-2-3-driven accounting program that integrates general bookkeeping functions through the use of journals. Best suited for a small company with basic accounting needs. Not copy protected.

CHCLE WHOM PERCENTILE OF

Next, you set up your company's ledger. The program includes a basic chart of 93 accounts that you can quickly modify by adding new accounts or by deleting changing existing ones. The account structure is based on ranges of five-digit account codes, which may not be adequate for companies desiring reports on a departmental or other subaccount level.

When entering beginning balances into he deger, as well as details of accounts re-ceivable and payable balances into the appropriate journals, you can citied from the CPA* prompts or enter data directly through 1-2-3. The program's prompts ensure proper formats, completeness, and mathematical accuracy by issuing error messages when appropriate. Direct date active is faster, but CPA* does not identify

errors until the ledger is updated.

You must verify the accuracy of the beginning balances manually, since CPA⁺ does not flag an out-of-balance condition at this point.

The information CPA^{*} maintains forcustomers and vendors is limited to current-period activity and names, addresses, and telephone numbers that you enter into the Names journal, from which the program prints mailing labels, envelopes, and hocks. CPA^{*} uses six other journals for entering various transactions: Purchase and Expense, Sales, Check/Cash Disbursements, Deposit/Cash Receipts, Emjoyee Payroll. and the General Journal.

ENTERING TRANSACTIONS The

program records vendor and customer transactions in the Purchase and Expense and the Sales journals, respectively, Information entered includes company, transaction date, the reference number, total amount, allocation amount, according amount, allocation amount, according to the CPA* Checks agreement of the allocations to the total amount at this time, but checks account validity during the lodger update. In addition, the program maintaints the balance of each item and automatically u-

When applying cash receipts, CPA⁺ first lists all open receivables and then prompts you to enter the amount received as well as discounts taken for each item. Next you enter the deposit date and the number; then the program automatically posts and displays the Deposit/Cash Receipts journal.

dates it for receipts or disbursements

To process cash disbursements (ac-

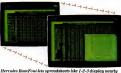


CPA⁺ lets you enter a lot of information on vendors—an asset when you need to track the account.

Better Spreadsheets, Fast With Hercules.

Like to know a secret shared by nearly 200,000 Hercules RamFont users? Your 1-2-3, Symphony, Framework or Multiplan*will run better on a Hercules Graphics Card Plus or Hercules InColor Card.

And we run them better in a number of ways.



Hercules RamFont lets spreadsheets like 1-2-3 display nearly twice the data with no loss in scrolling speed.

Display More Data.

First, you get more data on the screen without scarfficing your ability to screen without the spreadsheet fast. Hercules' exclusive Ram-Font mode let 1-23 and Symphony display nearly twice as much data (from 2,000 characters to about 3,400) expanding your view from 80 columns x 25 rows to a full 90x38. Microsoft Multiplan's display expands from 80x25 to 90x30 Multiplan's display expands from 80x25 to 90x30

Graphics Card Plus

Hercules Graphics

(For monochrome monitor

· Standard Text-For those

ands of text-based programs Hercules 720x348 graphics—

highest popularly supported standars
Hercules RamFont—3,072 software

definable characters improve many popular software programs. (Call for the latest iist.)

Includes the three movies

Card Plus

with the ability to toggle between the two. And Ashton-Tate's Framework goes from 80x25

to 90x43.

More data on
screen without a loss
of scrolling speed
means you get a more
functional spreadsheet. And you get

it fast.

Crisp Graphics.

Mono & Color.

Hercules 720x348 graphics is the highest popularly supported resolution available for IBM PCs/XTs/ATs, and a wealth of compatibles.

Our industry-standard 720x348 graphics mode and RamFont mode are now available for both monochrome TTL monitors (Hercules Graphics Card Plus) and enhanced color "EGA type" and multi-sync monitors (Hercules InColor Card).

All of which means that built-in graphics on 12-3, Symphony, Framework II, SuperCalc 4, Javelin, Open Access, and Enable will be able to run in both mono and full color on either card. And so can add-on packages like Microsoft Chart, VP Graphics, and Stella Business Graphics.

Compatibility Plus.

Which brings us to yet another big benefit for spreadsheets and graphics. Hercules cards are

completely compatible with each other.
Any monochrome standard text, Hercules graphics or Hercules RamFont compatible program (and there are thousands of them) will run in two to sixteen colors on the Hercules InColor

run in two to sixteen colors on the
Hercules InColor available in both mono and color for
Card without changing video drivers.
And that makes moving (or networking)

between mono and color systems a breeze. So, for better spreadsheets ask for Hercules with RamFont. We're the graphics cards you can count on.

Hercules InColor Card (For multi-spac and enhanced color "EGA-type" monitors.) Runs all Hercules monochrome software in 2 colors, most popular software in up to 16 colos selected from a palette of 64.

tours an recrues monocurous sortware in 2 colors, most popular software in up to 16 colors selected from a palette of 64. Standard Rext—All programs run in 2 or more colors. Hereules 720x348 graphics in up to 16 colors 15% higher resolution than EGA.

Hercules 720x348 graphics in up to 16 colors—
15% higher resolution than EGA.
Hercules RamsFont—3,072 software definable characters in 16 colors up to 12,288 in 2 colors.

For more information call Hercules toll-free at: 1-800-532-0600 Ext. 302. In Canada, 1-800-323-0601 Ext. 302. CIRCLE 142 ON READER SERVICE CARD

Hercules We run your software better.

ACCOUNTING

counts payable), you go directly to the Print Checks option instead of a data entry option. You may choose to pay either all payables or a range of payables; the range may be a specific vendor or transactions within a specified date range. Unfortunately, the date range is based on the transaction date and not the due date.

Once you make your selection, the system displays all items that meet your critiral and prompts you to enter the desired payment amount and any floor of the retiem. Warning: no offi procedures here prevent you from paying an amount greattiem. Warning: no offi procedures here prevent you from paying an amount great or than the balance. When the entry process is complete, CPA² prompts you for the check date and the first check number. It prints the checks and automatically posts and displays the Check/Cash Disbursation of the check displays the check Cash Disbursa-

ments journal.

The General Journal records all adjusting and closing entries, as well as any transactions that do not fit into the other journals. It does not allow for automatic

entries (recurring or reversing).

The CPA* user manual is well organized and comprehensive. Its tutorial takes you through a sample of the main transactions you are likely to perform, making the actual use of the software easy.

Although larger businesses will want to look elsewhere, small businesses with modest accounting needs will find CPA⁺ a very good alternative to more expensive accounting software.

—Thomas A. Meyers

Dac Easy Accounting

Dac Easy Accounting, from Dac Software, his earned a reputation as a low-cost (569-95), functional accounting package and has earned a place among the nation's top sellers since it was released in April 1985. Version 2.0 has the same seven modules, but more features and reports. It's also easier on the user, with improved sercens and on-tine help.

The new version includes an automatic installation program. Your first task is to set up the General Ledger by designing your chart of accounts. Dac Easy Accouning allows six alphanumeric characters in the account number. You can enter yearly budgets by using the General Ledger or the





List Price: \$69.95 Requires: 256K RAM; two disk drives; condensed type or 132-column printer; DOS 2.0 or later.

or later.

In Short: The nation's top-selling accounting program. A flexible, inexpensive package with many unexpected features; surpasses the original version in look,
organization, and ease of use. Not copy pro-

tected. CIPCLE 660 ON READER SERVICE CARD

Forecasting modules, and you can alter budgets during the year. If you intend to use other modules, you set up the General Ledger interface file once you've established the chart of accounts. Finally, you specify whether or not your business uses profit or cost departments.

Due Easy Accounting requires that you enter General Ledger transactions grouped in batches by journal type. The other modules automatically assign journal types to batches of transactions. You can delete or change transaction batches until the time they are posted, as long as another module has not automatically prenared them.

Two accounting periods can be open at

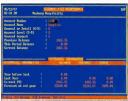
the same time. You don't have to wait until all prior-period transactions are entered before proceeding with the next period. The only requirement is that transactions not be posted to the new period before the old period is closed.

When an accounting period is closed, Dac Easy Accounting automatically deletes all transactions for that period. You must save month-end backups if you want to look at prior-period transactions on-line.

NEW REPORTS Dac Easy Accounting can produce Audit Trail reports by batch or account code for the period. New reports in Version 2.0 include a standard balance sheet, income statement, and statement of changes in financial position. The ability to calculate financial ratios such as liquidity, turnover, and onofitability is also new.

The Accounts Payable module is flexible and easy tour Cover and surface as open item or balance forward, so you can nack transaction information in door and the account that transacts strong the two popening balances through the very opening balances through the very opening balances through the very offer maintenance screen, which creates a bably four furnascations with a (System Sexul) four nat type. It posts the total to the Journal Difference account. This account has account structured when you input your opening seneral todger account balances.

New in Version 2.0's Accounts Payable module is the payments and adjustments screen, which displays all transactions for a vendor and allows you to scroll through and select invoices for payment or adjustments. Also new is a Payments and



Dac Easy Accounting's General Ledger chart-ofaccounts maintenance provides on-line inquiry into an account's previous balance, and historical balances and variances.

De-clone Your Compatible With Hercules.

Hercules 720x348 resolution and RamFont are now available

// ost popular IBM PC/XT/AT M compatible computers really stand out with Hercules Graphics Cards.

That's because our cards can actually improve the way software runs on the COMPAQ DeskPro 286/386, Leading Edge Model D, and IBM compatible models from Epson, Hewlett-Packard, Kaypro, NCR, Tandy, Zenith, and many others.

Three Modes You

Need for Your

Software.

allows popular

programs to dis-

play up to 3.072

of the fixed 256

ASCII character

Text Mode: Thou-

sands of standard

text programs run

on both Hercules

Lotus 1-2-3 and

With RamFont.

Symphony display

software definable characters instead

Both the Hercules Graphics Card Plus

(for TTL monochrome monitors) and new Hercules InColor Card (for multi-sync

and enhanced color "EGA type" monitors)

most out of software on your compatible.

from Hercules' crisp 720x348 resolution-

RamFont Mode: This powerful new mode

in monochrome, or up to 16 colors.

the highest popularly supported standard-

contain the three modes you need to get the

High Resolution Graphics: Your PC benefits



can have the true text speed display of italics, subscripts and superscripts. And, it enables add-on packages to open up whole new areas of font and foreign character display for programs like WordPerfect.

WordStar, and Multimate: while providing powerful capabilities for software of the future.

We Love Compatibility Our Graphics Card

Plus and new InColor Card are completely compatible with each other. So you can

in up to 16 colors on your multi-symc or "EGA Type" monitor. easily move your software from mono to color systems and back again without

worrying about video drivers. So to get the

most out of your software, specify a Hercules Graphic Card Plus or a Hercules InColor Card for your system. And make your compatible



1-2-3, and other popular spreadsheets, display nearly twice the data with no loss in scrolling speed.

more than a clone. Graphics Card Plus

Hercules Graphics Card Plus (For monochrome monitors

Includes the three modes you · Standard Text-For thos.

of text-based programs

Hercules 720x348g raphics—
highest popularly supported standard

· Hercules RamFont-3,072 software definable characters improve many pop software programs. (Call for the latest l

nearly twice their regular spreadsheet data... with no loss in scrolling speed. Microsoft Word runs up to four times faster. Lotus Manuscript, and many other word processors,

Hercules InColor Card

(For multi-sync and enhanced color "EGA-type" monitors.)

Runs all Hercules monochrome software 2 colors, most popular software in up to 16 colors selected from a palette of 64. · Standard Text—All programs run in 2

Hercules 720x348 graphics in up to I colors—15% higher resolution than EGA

Hercules RamFont—3,072 software definable characters in 16 colors up to 12,288 in 2 colors.

For more information call Hercules toll-free at: 1-800-532-0600 Ext. 302. In Canada. 1-800-323-0601 Ext. 302.

Hercules We run your software better. programs.

Dac Easy Accounting continues to have a lineup of extras you'd expect to find only in expensive, high-end

Adjustments journal that lists computergenerated and manually prepared checks.

The program supports multiple bank accounts but restricts you to one bank accounts but restricts you to one bank account per check run. It can produce Check Preview and Check Register journals for validation purposes. Other reports include a vendor listing, detail aged analysis, statements, and labels, all of which can be sorted by one of five main categories and ten subcategories.

The Accounts Receivable module mirrors the Accounts Payable module. New in Version 2.0 is the cash receipts screen, which displays all transactions for a customer and allows you to scroll through to select invoices for payment or adjustments. The module processes transactions in batches, and it can print a journal for validation before posting to the Accounts Receivable subledger and the General Ledger.

Daily reports include a Sales journal and a Cash Receipts journal. As in the Accounts Payable module, other reports include acustomer listing, detail aged analysis, statements, and labels, all of which can be sorted by one of five main categories and ten subcategories. Date Easy Accounting can print statements on preprinted or general-purpose Accounts

The Version 2.0 documentation is better than that of Version 1.0 but should include more detail on how to set up opening balances and departments. The manual also includes an accounting tutor.

Back in October 1985, PC Magazine chose Dac Easy Accounting as its first Edi-

tor's Choice for low-cost accounting programs. The latest version maintains the original's ease of use but far supasses it in form and function. Despite its amazing low price, Dae Easy Accounting contino to have a lineup of extras you'd expect to find only in expensive, high-end programs.—Dave R. Coulombe

Indian Ridge Accounting Software

Indian Ridge Accounting Software sports some high-end features without a high-end price tag. With each module only \$49.95, Indian Ridge Enterprises intends to take a whack at Dac, the vendor of the highly successful, also low-priced Dac Easy Accounting (also reviewed here).

Although the fact that you can either purchase each Indian Ridge module separately for standalone use or integrate them together is a clever approach, no main menu lets you access all the modules without exiting to the operating system. A separate product, Window Masters, links the modules more efficiently.

A menu-driven routine makes installing the software easy. Novice users can quickly choose preselected parameters for accounting and system features and later refine them for greater sophistication.

The General Ledger account structure is fairly rigid, as is typical in low-end packages. A four-digit code defines the prime accounts, with a two-digit code added for departments. Because financial statement formatting is hard-coded into the program,



the accounts must fall into system-designated ranges.

Each data entry screen prominently displays the company name—a big help if you're working on more than one compatified to the companies, it called the disposite multiple companies, it called the disposite multiple companies, it called the companies of the years of the companies of the companies of the working the companies of the companies of the same sign to signify a credit entry, Indian Ridge uses the unconventional (and couments and the control of the companies of the when a debt it is made to an account that normally carries a credit balance, and vice versa.

Fixed financial statement formats like



Indian Ridge Accounting Software's voucher entry screen in Accounts Payable lets you record prepaid bills in one step—a task that often takes two steps in other packages.

Vetworks Love Hercules.

Mono to Color Compatibility Make Driver Worries a Thing of the Past,

If you're trying to tie together your IBM compatible PCs, you don't need us to tell you about the hassles of different kinds of color and monochrome monitors and graphic cards requiring different video drivers for different software spread throughout

your network. A single unified driver runs many



programs in monochrome..



installed with the program at the file server will work with both your mono and color PCs. And that's one less thing to worry about.

We Run Software Better.

That great compatibility and unified driver concept is just one of the ways we improve the way software runs, on or off a network.





Your software also benefits from Hercules'

Hercules can make your life a bit easier. And while we're at it, improve the way your software runs. Our suggestion:

You've probably already standardized on Hercules cards for your monochrome PCs. We suggest you also standardize on Hercules for your enhanced color systems.

Good-bye Driver Worries.

Our new InColor Card is fully compatible with Hercules monochrome cards. This means it will run every one of the thousands of programs written for those cards in two

colors, using the standard monochrome driver included with the software.

And most popular programs... like 1-2-3, Symphony, Framework, AutoCAD. and many others use a single driver to run in full color (up to 16 colors selected from a palette of 64) on

our InColor Card.

and in mono on our monochrome cards. What it all adds up to is this: If you've standardized on Hercules, a single driver crisp 720x348 resolution-the highest popularly supported standard in monochrome or full color.

And Hercules exclusive RamFont mode improves the performance of spreadsheets and word processors (1-2-3, Symphony, Framework, Word, Manuscript, and many others) by letting them display up to 3,072 software definable characters instead of the fixed 256 ASCII character set.

So, to get the most from your software and your network, specify the Hercules Graphics Card Plus, or the Hercules InColor Card for your systems. Your network will love you for it.

Hercules InColor Card

Runs all Hercules monochrome software in 2 colors, most popular software in up to 16 colors selected from a palette of 64.

Standard Text-All programs run in 2

Hercules 730x348 graphics in up to 16 colors—15% higher resolution than EGA. Hercules Ramfont—3,072 software definable characters in 16 colors up to 12,288 in 2 colors.

(For multi-symc and enhanced color "EGA-type" monitors.)

Hercules Graphics Card Plus

- Includes the three modes your · Standard Text-For thousands
- Simulatin Hele-Fort throughouse of text-based programs
 Hercules 72(ti:348 graphics—highest popularly expported standard
 Hercules RamFont—3,072 software
 - sable characters improve many popular ware programs. (Call for the latest list.)

For more information call Hercules toll-free at: 1-800-532-0600 Ext. 302. In Canada, 1-800-323-0601 Ext. 302.

Hercules

We run your software better.

Our new desktop manager is more than you bargained for.

No matter how you define "desktop accessory products," Metro" rewrites the category.

PC World calls it "the most comprehensive assemblage of desktop accessories to date." And Info World says simply, "At \$85, it qualifies as one of the year's best bangains." The all-things are-possible

program. But what is Metro? And what will it

do for you?

According to PC Magazine, it's an

unprotected, "all-things-are-possible terminate and stay resident (TSR) program that can potentially replace most, if not all, of the TSRs you customarily use."

A powerful macro function and 12 ambitious accessories.

Quite a mouthful. But, then again, quite a product. Metro combines a powerful macro processor with 12 other accessories. Of the macro function, Ind World writes, '... (it) goes further than similar products and provides the elements of a simple programming language.'"
"In a worl" continue B" Musta.

"In a word," continues PC Magazine, "excellent."

Of the 12 other accessories, Info

World noted "... we expected a few of them to be of limited usefulness or poorly implemented. We did not find this to be true." These accessories include:

 The filer, which organizes data and program files, and performs DOS functions.
 The editor, which allows you to write memos, letters, and reports

without leaving Lotus 1-2-3" or Symphony."

The phone book, which dials your phone and produces maiting

labels.

• The <u>clipboard</u>, which moves data from one Metro accessory

to another, and transfers data from one application program to another.

• The list manager, which maintains to do lists, and tracks tasks

 The list manager, which maintains to on lists, and tracks tasks and projects.
 The watch, with alarm, which times up to 100 individual tasks.

The <u>calculator</u>, with exponential display, which performs arithmetic and financial calculations.
The <u>notepad</u>, which records ideas, memoranda, and notes.

The appointment book, with audible alarm, which maintains daily, weekly and monthly calendars.
 The kaleidoscope, which customizes the accessory display for color

 The <u>leaendoscope</u>, which customizes the accessory display for color monitors.
 The configuration, which manages the memory allocation of

Metro and customizes its functionality.

 And the special characters, which serve as a reference for ASCII characters.



A real solution to RAM-Cram.

What makes Metro more functional than any companable product is that all IZ of its accessories need not be in memory at the same time. Once the Metro kernel is loaded, you may call up any or all of the IZ accessories, customizing your own program. In the words of IZ. Letter, "Metro offers a comprehensive, essentially bullet proof, single vendor alternative" to using other, incompatible accessories. And you can unload if from memory with a sign attention of the internative of the internative in

Metro," continues P.C. Letter,
"is that you don't have to worry
about its accessories killing each
other or the application" you're
using, Metro essentially provides
"that long awaited, much debated
solution to what's fondly known
as RAM-Cram."

An ever-expanding environment.

Metro saves you time. Makes you more efficient. And accepts standard Lotus commands. What's more, it provides an ever growing environment that will make it "even more

\$85 and available now.

far-reaching and powerful" (PC Magazine).

Amid all this praise, there must be a problem, you think. Perhaps it's difficult to use? Not so, says Info World. "We had Metro up and running 20 minutes after tearing off the shrink wrap."

Now you can, too. For only \$85, you can have Metro, the software PC Magazine has "vying for honors as the king of the TSR programs." Unprotected, customizable, sure to save you time and trouble, Metro is the management tool you've been longing for.

So visit your authorized Lotus dealer. Or call 1.800-345-1043 today. Ask for product no. QS-1680. (For more information, ask for QS-2821.) Order your copy of Metro now. For only \$85, you'll be getting more than you bargained for.

Lotus Metro

The memory-resident desktop manager combining twelve accessories and a powerful macros program.

System Decorreses Latin Meion raw on BMS *PC-XT Porable PC, Pertable AT*
COMPAN PRETABLE** COMPAN (LASS** COMPAN (LASS** Two S. S. S. étable and disk der
Land da in recommende for pertain perference). Morame of SRY regarde for FAM resides
intented (Meior, DGS 2 for higher *Heion is superiorised and no be removed from meior,
Loss Meion raw with a wider variety of lastice preparate, including 1.37 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners Companies College, 1.2.1 *Stypet's no.
C) SRT (Just Devisioners College, 1

Lottes, 12-3 and Symphosy are registered trademarks, and 1-2-3 Report Writer, Signal and Metos are trademarks of Lotus Development Corporation.

ACCOUNTING

Indian Ridge's require little effort to set up and are often all that a small company needs. General Ledger produces the standard journals-Original Entry, Summary Trial Balance, and Detail Trial Balance, Indian Ridge offers no provision for budgeting or comparisons with prior actuals.

Accounts Payable neatly records, tracks, and pays the bills. It sports highlevel features such as recurring vouchers. and it is able to record a bill as prepaid in one data-entry session. You can transfer data from Accounts Payable to the General Ledger in detail-a great help in reconciling accounts.

You must set up a chart of accounts in the Accounts Payable module, which is necessary, of course, when running in standalone mode but redundant when interfaced with the General Ledger. Another drawback: you access each vendor by a system-assigned vendor number instead of an easy-to-remember user-defined code.

You enter hills via a voucher-entry screen that allows expense distribution to multiple accounts. Indian Ridge handles bills and payments flexibly and quickly, giving you various options to accommodate your needs.

You can generate management reports that show an aging of payables and the cash required to pay bills that are due as of a user-designated date. An admirably flexible routine can change any bill's due date and set up any bill for partial payment. Also, a vendor history report shows purchase and payment history by vendor.

BASIC FUNCTIONS Accounts Receivable records credit sales, cash sales, credits, and payments and produces various reports and statements. It also handles recurring invoices set up as installmenttype sales or simple recurring periodic charges. The payment application screen offers no on-line access to unpaid in-

The aged trial balance ages invoices or balances by three user-defined periods. The listing includes the customer's phone number, handy when you have to call delinquents. A helpful summary shows percentages, numbers of transactions, and average invoice amount.

Also available are Inventory and Order Entry/Invoicing modules and business

tools, including windowing, word processing, and mail-merge. Each module's manual is over 100 pages and includes a brief tutorial, but they could use more emphasis on accounting.

Indian Ridge is an effective low-end accounting system for companies that want to start out by automating a single application. Accounts Receivable and Accounts Payable each offer a low-priced, simple, standalone solution that can eliminate a lot of time-consuming manual work. -Steve Gentino

Li'l Chief and The Golden Eagle

Li'l Chief and The Golden Eagle, from Thoughtware Publishing, Co., are two basic small-business accounting systems that can work together. Golden Eagle helps to make up for some deficiencies in Li'l Chief's General Ledger, Li'l Chief has its roots back in the world of CP/M. It was brought into MS-DOS as a low-end, nofrills system. Its three modules-General Ledger, Accounts Receivable, and Accounts Payable-are available for \$150 each or \$350 together.

Since The Golden Eagle's slightly more sophisticated General Ledger, which sells for \$400, can read Li'l Chief files, accountants whose clients use Li'l Chief may find it helpful for maintaining the general ledgers and producing financial reports. Both programs will handle multiple com-

panies, but without consolidation. Installing Li'l Chief is simple, but the



477 Chi

telephone

from topic to topic.

no provision for budgeting.

Thoughtware Publishing Co. P.O. Box 669 Grants Pass, OR 97526 (503) 476-1468 List Price: LE1Chief:

General Ledger, Accounts Receivable, Accounts Payable, \$150 each or \$350 for all three. The Golden Eagle: \$400 for General Ledger, one other module available. Can be used together or senarately Requires: 64K RAM: two floory disk drives; DOS 2.0 or later. In Short: LFI Chief is a no-frills, fast, easyto-use program, but it requires extra keystrokes to enter repetitive data and lacks security measures. Golden Eagle's General Ledger can be used by accountants to rr tain their clients' Li'l Chief General Ledgers

and produce financial reports. Not copy protected, but requires unlock code obtained by CITICLE 657 ON READER SERVICE CARE manual is sketchy and bounces around

To start up the General Ledger, you enter the chart of accounts using a 12-character alphanumeric account number. Then you enter the beginning account balances through the journal. The program makes

Li'l Chief does not use dates to identify accounting periods. Every time you enter each of the modules, the program displays the last access date, which it uses on reports; you can accept it as the current date

2.5.2 - Add-Change Accounts Copyright 1981 by Bats Train, Inc. Support Teliphone (583) 476-1467 WE'S SUBFROOD NAMERACTURES HAR MALE'S SUBTROADS THE Account Balance Balance Toronto Mtd Debits Mtd Credits STATUS STATUS: LI'L CHIEF IS WASTING FOR YOUR RESPONSE

In Li'l Chief's balance-forward system, any balances can be manually changed from this screen-a risky proposition that co throw accounts into chaos if not carefully controlled.

or overwrite it. When you start to enter transactions, you must once again type the date.

All entries in the General Ledger for a month go into that one journal. You have to assign a three-character "type" code to each entry to identify it. Since you can print separate listings of journal entries by type code, the code is helpful for catego-

rizing transactions. Li'l Chief does not automatically integrate monthly totals from Accounts Receivable and Accounts Pavable directly into General Ledger. Like General Ledger, both these modules assign a type code to different types of transactions, since they summarize totals for the month only by type code. (In the case of Accounts Payable, you must use the type code for the account distribution to get a breakdown of expenses by General Ledger account: no other account distribution list is available.) You then manually reenter the type code totals into the General Ledger journal, again using a type code to identify the

This method seems cumbersome because of the amount of manual entry and the repeated entry of totals from Accounts Payable and Accounts Receivable. You can run an edit list of the General Ledger journal and make corrections before the journal is posted.

journal is possed.

Accounts Psyable and Accounts ReAccounts Psyable and Accounts Reing the month and close the total into a balen forward in the month-and route.

They identify vendors and customers with
a 12-character alphanumeric code. Accounts Receivable cannot handle involenting it simply keeps track of billing, payments, and customer balances, but it also
write checks, but you must input the items
to be paid after printing a cash requirements report.

WEAK SECURITY You cannot accidentally delete an active account, but you can after any balances in general ledger, customer, and vendor accounts via the account maintenance function. Unfortunately, you can change all balances to zero and then, if there is no current-month activity, delete the accounts. Thus, Li I Chief is appropriate only for companies in which no

BUILDING A SUCCESSFUL SYSTEM

Price Waterhouse's guide to getting the most from your resources.

- Identify your company's critical success factors: cash investments, equity, and trade credit should support them.
 Determine which information sys-
- tems set clear objectives for what you will automate.
- Avoid these commonly made mistaken assumptions:
- That having a computer will make your company competitive. The object is first to be effective, then to be efficient.
- That you must interview all users.
 A lengthy requirements analysis process can overwhelm your efforts to implement the solution. Spend your time wisely as you prepare to convert.
- 3. That you should automate as much as possible. Pareto's Rule (the old 80-20 rule) holds here. Try to make compromises so that you can take care of 80 percent of your needs with 20 percent of the cost.
- That you will eliminate only manual tasks.
- That a poor manual system will be improved by a good automated system. Good procedures and policies, plus the discipline to use them, are as necessary.
- discipline to use them, are as necessary.

 6. That hardware will be the greatest expense. It's actually about 20 percent. Your internal costs, training, and the time spent implementing the new system
- will represent the largest part (about 45 percent) of the real expense.

 Consider automating if you:

 I, have more than 50 transactions in a
- particular accounting function during the month,
- have more than three clerks in any single financial record-keeping area,
 spend over \$500 a month for a ser-
- vice bureau, or

 4. have processing requirements that
 make a good fit with an unmodified commercial package. Avoid customizing a
 program.

- Look for value, not the lowest cost.
 - Before implementing a computerized system: 1. Train the users so that they under-
 - stand their roles and responsibilities within the new system.
 - Prepare the site with adequate electrical power, and ventilation: eliminate excessive dust, bear, cold, and so on.
 - Notify your insurance carrier of your automation plans.
 - Order all the forms and supplies you're going to need.
 - Design a security system and backup methods (see "Security Strategies: Hardware Protection for PCs," PC Magazine, Volume 6 Number 8 for a wide range of possible schemes).
 - Devise a training manual that includes proper closedown and backup procedures, cross-training responsibilities, and security.
 Develop a sensible and controlled
 - method to convert your manual data. Consider "running parallel"—that is, maintaining both a manual and automated system until you are confident that both yield the same results and the new system is running without glitches. 8. Refine your accounting calendar.
 - Keep a checklist of what should be done daily, weekly, monthly, and at year-end. Develop a report set that contains your necessary information. Then "cutover" and commit to the computer operation when everything is in place.
 - Manage situations. Enforce logging of procedures checklists.
 - or procedures creatists.
 Meep up with the newsletter from your software company. It should inform you of coming upgrades (but only implement them when desired), improvements, or fixes available to the code. Participate in the user group if one exists.
 - Advice from experienced users is the best kind.—Timothy J. Lee

THE TWELVE COMMANDMENTS

Bylaws for computerizing your accounting system.

- Don't computerize a very small business's accounting system-especially not the payroll.
- Consider the usefulness of a nonauto mated spreadsheet-based bookkeeping system.
- You don't have to computerize everything-general ledger, accounts receivable, accounts payable, and so on-only what's most important to you.
- Start with general ledger . . . then accounts receivable, maybe . . . then accounts payable, possibly . . . then stop
- for at least a few months. ■ Choose the start-up/changeover date with care, allowing plenty of time for your staff to set up the new system.
- Run vour old, manual system in tandem with the new, computerized system for 90 days. If you're unwilling to do this, don't put the books on the computer in the first place!
- · Keep supporting paperwork, especially invoices, for 2 years (or more, if your CPA recommends it).

more than one or two individuals have access to the system.

The Golden Eagle's General Ledger can read Li'l Chief's files. On the plus side, the menus have been restructured somewhat, and there are a few more options for financial reporting. On the minus side, it runs a bit slower. Accountants whose clients use Li'l Chief may find The Golden Eagle General Ledger helpful for maintaining client accounting needs, but most accountants will want a general ledger with more features-such as recurring entries-and a more flexible report writer.

Li'l Chief and The Golden Eagle fall at the low end of the sophistication range in accounting programs. Only the smallest businesses should consider them. However. Thoughtware has introduced a new product, Superchief, at \$795 per module. This enhancement of Li'l Chief and The Golden Eagle is designed for larger companies, includes an on-line manual, and

 Make sure that at least two or more people in the office can use the system.

- including you.
- Involve your CPA before you begin planning (let alone buying) to: 1. judge the adequacy of the systems
- you're considering and recommend audit-trail procedures. 2. ensure the sufficiency of the sys-
- tem's reports, and 3. draw up the chart of accounts.
 - Don't try PC accounting without a Establish good backup proced-
 - ures-weekly, daily, maybe even twice
 - Arrange for off-site storage of backup disks or tapes, even if it's nothing fancier than taking every second set of backups to a safety deposit box at your bank. Accidents and floods do happen.

-Jim Seymour Copyright 1987 by Jim Seymour, All

Rights reserved. offers more customizing capabilities. Unfortunately, it was not available in time for

our reviews .- Harold Berry One-Write Plus

The concept behind Great American Software's One-Write Plus is wonderfully simple: it adapts the format of the popular onewrite manual accounting systems to software. Great American advertises the basic accounting program as "accounting software for anyone who can write a check," and the claim is true to some extent. But with One-Write Plus's simplicity comes inflexibility. As users become more sophisticated, they will most likely outgrow the program.

Installing One-Write Plus is easy. You must choose which of the available charts of accounts you want One-Write Plus to load-vou cannot enter your own from



FILE

One-Write Plus Great American Software Inc. P.O. Box 910 Amherst, NH 03031 (800) 528-5010 List Price: Master mod ule (General Ledger). \$295; Accounts Receivable, Accounts Pay-

able, \$245 each. Also available: Utility disk, \$79.95; one other module Requires: 256K RAM; DOS 2.0 or later. In Short: An easy-to-use entry-level accounting program based on the familiar one write manual accounting system. Designed for first-time users, it includes many useful features, but more-experienced users will

find it inflexible. Not copy protected. CIPCLE 655 ON READER SE scratch. If you'd rather start completely fresh, you must key in One-Write Plus's partial chart, delete its accounts, and re-

place them with yours. The "welcome" screen will alleviate the fears of first-time users; it's a picture of a familiar one-write checkbook. Next, the program asks if you are using a color or a monochrome monitor. (Instead of having

to answer this query each time you use the program, you should be able to configure the video setup initially and be done with it once and for all.)

One-Write Plus is truly one of the easiest accounting programs available. Once you are set up, using it is second nature. Menus are concise and contain descriptions that users of manual one-write systems will recognize instantly.

Considering its target market (first-time users), the program offers a relatively large number of features. The Master module (the General Ledger) can maintain three cash accounts. You set up the receipts and disbursements journals for these accounts. which look exactly like the manual one-

write versions. One-Write Plus treats all journals as batches that can be posted only at monthend closing. It cannot post transactions in the middle of a month to produce an interim statement. And One-Write Plus supports recurring journal entries, but it has no option for reversing a journal entry.



One-Write Plus's Accounts Payable purchase entry screen offers such advanced features as one-time vendors and vendor ID number lookup.

One-Write Plua's Accounts Receivable and Accounts Payable modules also offera wide range of features, and data entry is awde range of features, and data entry by a continuous and the post phonetic matching of customer and evendor numbers. If you enter an approximation, the program produces the closest match. You can then go forward or backward to find the customer or vendor numbers you want. If the customer or vendor doesn't exist, the module gives you the topic of a dading it during transaction entry to enter it. One-Write Plus also handles mailing labels for customers and vendors.

In keeping with its assumption that the program's users are inexperienced, Great American has written strong, well-organized manuals that make finding the right answers easy. Each screen is well illustrated and explained.

With simplicity comes inflexibility, though. One-Write Plus does not offer many of the choices available with more sophisticated software. You can keep information on only one company on a hard disk: you must use floppy disks for data on any other companies. One-Write Plus has no report writer; only the default set of reports is available.

To relieve you of the task of learning the DOS commands needed to back up and restore data, *One-Write Plus* includes DOS batch files to accomplish these tasks. But each time you back up, you are forced to format disks, with no option to skip this step. Great American supplies file structures to users who want to set up their own batch routines.

The easy-to-use One-Write Plus can handle your basic accounting needs simply and for a good, long time. But as your experience and needs grow, you'll probably get tired of being spoon fed and yearn to bite into a more sophisticated system. However, if you're using a manual one-write system and have little or no computer experience, you can't go wrong with One-Write Plus for your first attempts at automated accounting.—Charles Weilberg

Peachtree Complete Business Accounting System

Yes, Peachtree Complete Business Accounting System is still around—and it's still surprisingly competitive. The Peachtree system has been available on the PC since IBM introduced the computer in 1981. In June 1986, Peachtree Software reduced the price of the eight-module system from \$4.760 to \$199. The program has some unbeatable capabilities and functions—some found only in a few "high-

On one hand, Peachtree's handy and capable system features include easy installation, fast and easy data entry, good audit trails, excellent batch controls with hash totals, and an Esc key to release you from an input field. The package has well-written and well-indexed manuals.

On the other hand, Peachtree does not

end" products and in Peachtree.



cate how much disk space to use for data). It also limits you to a numeric six-digit chart of accounts number, enters credies as negative numbers, lacks help screens, and accommodates only a yearly budget in conjunction with the previous year's data.

tions for small businesses to implement. Not copy protected.

ORCH # ### ON BEADER SERVICE CARD.

In addition, Peachree posts mainly by using real-time procodures instead of the batch method. It updates the General Ladger and all subsidiary ledgers after you enter data rather than when you tell it to post. While the real-time method saves time and ensures that the General Ledger always reflects current information, it necessitates using adjusting journal entiries to correct profuses, from an in propositing, in Peachree without using adjusting journal entires.

WORKHORSE Peachtree's General Ledger is a workhorse. You can depend on it to get the job done: every entry can have a printed audit trail, you can use cost centers, depreciation and amortization schedules are available, and the program permits recurring journal entries.

However, the General Ledger is clearly not a show horse. The only financial reports i produces are balance sheets and income statements, both combined and departmentalized. Another \$199 Peachtree Software product, Peachtree Data Query (PDQ), is available to manage the accounting files and export information in

INDUSTRIAL STRENGTH CAM/CAD

FROM YOUR DESK.

Presenting the Personal Machinist from a leader in the CAD/CAM industry.

Now you can bring the power of CAM/CAD to your desktop at an affordable price. All on an easy-to-use

industry standard IBM* PC AT, XT or compatible.

The Personal Machinist links CAD and CAM functions. If you're responsible for overseeing production, design, or programming NC parts, it's just for you.

The system lets you design 3-D geometry and create NC manufacturing programs for parts, tooling or fixtures.

The design portion of the Personal Machinist is currently accepted as the most powerful 3-D PC design software available – Personal Designer* GCD.

The NC module is compatible for use with milling machines, lathes, punch presses, EDMs, and flame or

The screen display at left shows a top view of a 3-D model with dimensions. It was created using the design module. To the right is an isometric view of the toolpaths produced relding to the design.

geometry

laser cutting equipment. A powerful post processor generator program is also included.

The Personal Machinist
Is a power tool for your desk.
It can also be used to run any

number of standard software packages to perform other office or job functions.

Simple enough for the beginner

or casual user. Powerful enough for an expert. The Personal Machinist is an important breakthrough in CAM/CAD. With a cost per seat low enough for most budgets.

The Personal Machinist. Industrial Strength CAM/CAD from the strength of Computervision.

For more information write: Computervision Corporation, Personal Systems Business Unit, Building 16-2, 100 Crosby Drive, Bedford, MA 01730.

CIRCLE 159 ON READER SERVICE CAR

Personal Machinist









PC Mouse

Microsoft™

Why you should buy a mouse with no moving parts.

Several reasons. No moving parts, no problems.

Their mechanical mouse has a rolling ball, a commutator, little teeny bearings and shafts, and plastic housings housing who-knows-what. All of which make it less reliable. Less accurate. And so dirty it actually needs to be cleaned now and then. (Ever clean a mouse? You don't want to.)

Our PC Mouse, on the other hand, is optical, It uses a mirror-like pad that reflects a tiny beam of light. It's faster. More accurate. And so reliable, it's the only mouse with a Lifetime Warranty.*

And now, PC Mouse has been improved so it's better than ever. The New PC Mouse has an advanced ASIC microprocessor which dramatically reduces power consumption. So we've eliminated the power supply.

Which makes PC Mouse even more reliable. We've also lowered the price. The New PC Mouse is a better value than ever.

PC Mouse will drive any software package written for use with a mouse and quite a few that aren't. And you can choose either our serial version or our Bus Plus model with its own serial card.

Both models include our Designer Pop-up™ menu software with 30% more functionality-FREE.

The New PC Mouse. With no moving parts, no problems and a new lower price, there's no question

about which mouse is better.



ACCOUNTING



Unlike some "lowend" packages, Peachtree Complete Business Accounting System's General Ledger lets you make inquiries about accounts.

ASCII, .DIF, .WKS, and SYLK file formats. According to the product literature, PDQ can create on-screen queries, format custom reports, graph data, provide context-sensitive help, and produce some predefined reports.

Peachtree's Accounts Receivable performance matches or exceeds that of some higher-end packages. Its main feature is its ability to handle an unlimited number of sales tax districts, along with reports to help you complete sales tax returns. Also, you can enter noninventory items as well as their costs.

The program reconciles open items, matching payments to unapplied invoices. You can print invoices and statements without using special forms. Moreover, the program's reports are useful and easy to read. But unfortunately, Accounts Receivable doesn't store shipping addresses, activated monthly of the program's reports are useful and easy under the program of the p

The Accounts Payable module tracks the basics: year-to-date purchases and purments, last-check information, and current balance. Selecting certain invoices for payment is easy and flexible, with screen prompts to guide you. But once you select the invoices to pay, you cannot get a pre-payment report. The screen displays only the total amount to be paid.

A new version of Peachtree, Version 4.0, will be available in July. It's scheduled to include on-screen lookup, a new menu design, range-printing capabilities, a 13-month accounting period option, monthly budgets, easy handling of voided checks, auto-invoicing and service invoicing through receivables, and user-defined aging.

Peachtree is an excellent low-end accounting program with a great track record and responsive technical support. It's a good choice for the small business that's looking for a no-nonense, no-frills lowcost accounting system.

-Wayne Harding

Rags to Riches

Rags to Riches, from Chang Labs, is an easy-to-use accounting program. However, if you're taking your company on the road from rags to riches, the program's lack of budgeting capabilities and security features could cause some trouble along the way.

The program has three modules that operate as separate programs, but some files are connected by a link (payables and receivables are fed into the General Ledger). Each module costs \$199.50, or you can buy all ture for \$599.50. Chang Lads says it will soon release a Retail Inventory module with positi-of-sale features that will cost \$199.50. Rogge no Richer is designed use with positi-of-sale features that will cost \$199.50. Rogge no Richer is designed propensur, so even excutives with a modum of hookkeeping experience can install the program and set up the accounts.

When you initially open your books in the General Ledger module, you can defective your own accounting period. Rags to Riches sets up accounts in a rather unique way. Account numbers are not necessary.



ocivable, Accounts Payable, \$199.95 each; \$499.50 for all three. Requires: 256K RAM; two disk drives; DOS 2.0 or later.

IDOS 200 mare:

In Shartz Raps to Riches, designed for small companies, lets you track accounts on-screen and has a separate window with a summary of all accounts. But its user interface is clummy, and it has no security or budgeting capabilities. Not copy protected.

GRESSEG DRACES SERVICE CAPO

Rags to Richer can have thousands of accounts, but account numbers come into play only when reports and financial statements are printed. The rest of the time, account numbers are invisible. Instead, the program uses single-key codes—for example, a.A.b.B.2.@—to identify and locate each account. This tactie is helpful when you are working with a small number of general bedger accounts, but it is exceeded to the contract of the number of the parallel of the program of

The General Ledger screen is divided into thirds, with the top-left window reserved for account information that shows one class at a time. You can view the account's single-key code, name, outstanding balance, and percentage. The top-right window displays a summary income statement and balance sheet so that you can see at any time whether you're making money and what your net worth is.

In Rags to Riches, on-line help, which is limited, is displayed along with error messages in the summary window. The bottom partition of the screen is the transaction entry window.

There are five transaction types, and each is treated as a batch. You are prompted for the two accounts involved, the amount, the memo, and the transaction date. You can post or reverse the transac-

ACCOUNTING



Rags to Riches'
Accounts Receivable
screen is divided into
three windows. The
usp left window
displays all of the
accounts and the
oussanding balance,
the upper right shows
the aging for one
account, and the
bottom displays the
initial account setup
data.

tion or move to the next or last transaction in the sequence. The General Ledger module produces 11 standard reports, including an audit trail, a transactions journal, and sales and receipts journals. You can choose to print either consolidated or departmental income statements and balance sheets.

POINT-AND-SHOOT MENUS II
place of a tricky command interface, Raga
to Richer sues simple point-and-shoot
nems. But you must read the manusche
cause the commands are not self-explana
and confusing manner: sometimes Eac is
used logically to back out of a command
sequence, at other times it is used to get to
trick the self-explana
to the property of the self-explana
to the property of the self-explana
to the property of the self-explana
to the s

The Accounts Receivable module lets you produce standard invoices and statements, as well as seven types of reports, including customer or invoice aging, general ledger distributions, and sales and receipts journals. The same simplicity is evident in Accounts Pavable.

Rags to Riches does not have a weath of features, and its lack of security could be damaging. For instance, checks could be damaging. For instance, checks could justed, and no one would 'kinow about it. Moreover, to move from one module to another, you're required to save your work, quit, and then load the next module. And unless you manually compare results, you'll find no budgeting capability.

—Christopher Barr

Ready-to-Run Accounting

Ready-to-Run Accounting, a \$49.95-permodule accounting system from Manusoli, Corp., is based on Lottu's 1-2-3. Both its strength and fits weakness stem from its strength and fits weakness stem from its strength and fits weakness stem from its stratigation of the spreadshee's features, Ready-to-Run offers above-average colleprompts make it slow (though easy to follow). And while its macro routines keystrokes, they also consume data entry time.

Customizing Ready-to-Run for your company is easy. You can modify the sam-



ple chart of accounts or create a new one. Ready-to-Run less you enter account numbers manually or have the system automatically assign them at intervals of 1, 5, or 10. While this option is user friendly, it's also time-consuming: it forces the program to go through a series of macro routines frequently while entering account information.

Ready-to-Run automatically compiles a series of standard financial statements with accounts grouped according to the summary headings you specify in the chart of accounts. In addition, if several accounts are grouped into a one-line item on a financial statement, you can elect to have Ready-to-Run display detailed information in a sup-



Ready-to-Run
Accounting's
Accounting's
Accounts Receivable
displays all open
invoices for the
customer number
emered. You can
apply a payment to the
open balance or to
specific items.

The Word Publisher.

Introducing Wordstar 2000 Plus? a powerful and innovative tool for word publishers that turns novices into professionals. It features: automatic reformatting of text based upon your font choice, multiple fonts in a document, newspaper style columns and automatic or discretionary hyphenation. It will even allow you to change fonts mid-line or mid-word and maintain right justification.

And here's something that'll stop the presses: when you order Wordstar 2000 Plus, you'll also get \$300, worth of additional software, absolutely free! Like Inset (Release 2.0) for importing graphic images directly into a document: Con-ofonts Manager of for casy downloading of fonts, a set of Commercial Scripto fonts and

TRUE Postscript" support.

Other Wordstar 2000 Plus power features give you access to electronic mail and information services, macros, three editing windows, indexing, footnotes and a host of other capabilities.

You can begin exploring the full poten-tial of word publishing immediately by ordering Wordstar 2000 Plus from Logicsoft – it's never been easier. For American Express, Visa and MasterCard ordering, just call our National Credit Card Hotline toll-free 1-800-645-3491. We'll process your order immediately, and ship it the very same day. Or, if you are on open account status with Logicsoft, send us a pur-chase order and one of our experienced account executives will be ready to discuss our corporate program and services.

At only \$219, become your own "publisher-in-chief" with the power, versatility and speed of Wordstar 2000 Plus. Order today!

Logicsoft is a Distributor for Over 250 Leading Manufacturers and Publishers of Leading Edge • Lotus • MicroPro • Microsoft • Okidata • Quadram • Seagate • Tecmar • Word Perfect

puter Products Including: Ashton Tate • AST • Compaq • Epson • Hayes • IBM •

The Largest Direct Distributor of Software and Hardware Products in the World

NAT'L CREDIT CARD HOTLINE 1-800-645-3491 PURCHASE ORDER HOTLINE 1-800-431-9037

NEW YORK \$16-249-9700 SAN FRANCISCO 415-621-6411 EDSTON 617-247-6406 ENICADO 317-327-0319 BOCA RATON 305-392-6544 MOUSTON 213-227-0311 FURDIFF 020-43-6554

430 day

We carry all ats

RATEC

235

389 409

> 109 45

79

SOFTWARE	Rapid File
WORD PROCESSING	DATABAS
Display Write IV Lotus Manuscript Microsoft Word 3. Microsoft Word 3. Muthmate Advantage II. 276 Office Writer w/ Spel PSP Professional Write Volkswriter 3. 144 Word Perfect. 200	Clipper Geniler Quickcode Quick Rep Quicksilver R Base Ex
Word Perfect Executive Low Price Call	ODDEAD

Wordstar Professional	
Rel 4	239
Wordstar 2000 Plus	219
XY Write III Plus.	245
WORD PROCESSIN	a
Fancy Font	\$139
Punctuation & Style	89

Word Finder Word Perfect Library	5
DATABASE MOMT.	
Cornerstone .	\$ 65
d Base III Plus	409
d Base III Lan Pak	599
Foxbase Plus	225
Foxbase Plus Multiuser	335
Paradox	309
PFS Professional File	14
Powerbase	185
Q&A	223
R Bese System V	455
Reflex	. 8
Revelation	519

	парилене
	DATARASE MGMT. ADD - ONS
	Clipper . Genifer
-	Quickcode Plus Quick Report
п	Quicksiver R Base Ext. Report Writer R Base Graphics
	SPREADSHEET/INTEG
	Ability Plus
i	Boeing Calc Enable

Enable	
Framework II	
Lotus 1-2-3	
Microsoft Multiplan	
PFS First Choice	
Sik	
Smart Integrated	
Supercalc IV (NEW)	
Symphony	
VP Planner	

SPREADSHEET ADD-O
4 Word
HAL
Lotus Report Writer
Lotus Metro
Quickcode for 1-2-3
Sideways
Spreadsheet Auditor
SQZ
DESKTOP PUBLISHING

Click Art Personal

Publisher

MICENT	POCKET	MODEM
MIGERI	PUCKET	MODEM

Miniature 300 / 1200 bos Haves-competible modern Compact size lets you carry it anywhere you go Bettery powered • Bell 212 and 103 compatibility Unique surface mount design Plugs directly into your computer RS232 port

\$159

8 В

SPECIALS

BOCARAM/AT

Unforgettable! Expand with the powerful new BocaRam/AT and forget about memory problems. Provides conventional expanded and extended memory all on one board, in one slot. You can extend the BocaRam/AT up to a whopping 4mb. Compabble. expandable and reliable

BocaRam/AT 128K	\$165
BocaRam/AT 512K	\$209
locaRam/AT w/2mb	\$349

avai	able 31/2" fo	r	n
235	Print Shop Harvard Pro Publisher Page Maker Ventura		
\$399	GRAPHICS		
145	Chartmaster		_
145	Diagram Master		
. 329	Energraphics (NEW) .		
179	Freelance Plus		
. 179	Harvard Presentation		

CAD/CAM	
Auto CAD 26	
Auto CAD Basic	
Drafix Plus	
Generic CADD	
Pro Design II	

Pro Design II	. 179
LANGUAGES	
BASIC Compiler (MS)	\$255
C Compler (MS) (40)	269
COBOL Compiler (MS)	. 425
FORTRAN Compiler (MS)	269
Lattice C Compiler	239
Macro Assembler (MS)	95
Pascal Compiler (MS)	179
Ouick Basic (MS)	- 65
True Basic	. 95
Turbo C	65

Turbo Pascal (plus BC	
& 8087) .	65
PROJECT MANAG	
Harvard Total 2	\$375

Super Project Plus Timeline	
FINANCIAL	
Managing Your Money Dollars N' Sense	5

Concurrent XM D
Copy II PC
Crosstalk XVI
Disk Optimizer
Disk Technician .
Eureka
Fastback
Fixed Disk Organ

Fixed Disk Organizer	49
Mace Utilities	69
Microsoft Windows	65
Norton Commander	45
Norton Utilities	55
Norton Utilities Adv. Ed.	85
PC DOS Low Pr	ice Calll
Remote	149
Sidekick	55
Smart Com II	89
Superkey	45
Take Two	89
Watch Dog	189
XTREE	39

HARDWARE

\$2359

269

209 69

\$69 Call

\$109 MSP 25

89 49

TOSHIBA T1100+ Lor T3100+ ZENITH	w Price Calil \$3249
Z-183	2359
PRINTERS BROTHER	
BROTHER HR 20 HR 40 M-1409 M-1509 M-1709 DICONIX	\$425 689 349 389 509
Diconix 150 EPSON	339
EX 800 EX 1000 FX 86E EX 286E	
P 660 P 760 CP 660 Color CP 760 Color P 560 XL P 960 XL	
M182 M192 M193 M293 2410P PANASONIC	369 559 735
KX-P-1080 i KX-P-1091 i	209 279 489
TOSHIBA P 321 SL P 341 E P 351 P 351C CITIZEN	559 775 999 1179
MSP 10	289 365

Premier 35 PRINTER BUFFERS QUADRAM Microfazer Series Low Price Call

MSP 20

DIGITIZER	
Summa Sketch 12x12 Summa Sketch 12x18	\$43 72
SCANNER	
SABA (Hand Held)	\$49
HP Scarnet	119
DATACOPY 730	. 132

329

499

1195

See Fox Run.

Now Run Your dBase Applications More Than Six Times Faster At 60% Of The Price... With Amazing FoxBase+!

FoxBase + 11 is a 100% dBase III Plus® comparible database that runs over 6 times faster than dBase, and more than twice as fast as the quickest compiler. If you already use dBase, you can use Fox-Base+ immediately because it's a true 100% dBase workalike containing the identical user-friendly features of dBase, And FoxBase+ allows you to convert all of your dBase files without changing a single line of code. Or, if you're thinking about a database, Foxbase + is ideal - combining dBase III Plus features with over 30 enhancements including: user defined function, save and restore screen, valid clause and dynamic memory allocation. As well as a fully interactive compiler containing familiar commands like EDIT, BROWSE, CREATE & MODIFY STRUCTURE, REPORT, LABEL and more. All for an incredible \$245 for the single-user package. Multi-user and 386 versions of FoxBase+ are also available. And you can get all of them

You can order from Logicsoft in two easy ways. For American Express, Visa and MasterCard ordering. just call our National Credit Card Hotline toll-free 1-800-645-3491. We'll process vour order immediately, and ship it the very same-day. Or. if you are on open account status with Logicsoft, send us a purchase order or call

1-800-431-9037 and one of our experienced account executives will be ready to discuss our corporate program and services.

immediately from Logicsoft.

Either way, at only \$245, you owe it to yourself to increase your productivity with FoxBase+. Order today!

Logicsoft is a Distributor for Over 250 Leading Manufacturers and Publishers of Computer Products Including: Ashton Tate AST - Compaq = Epons - Hayes + BM + Leading Edge - Lotus + MicroPro - Microsoft + Okidata + Quadram - Scagate * Tecmar + Word Perfect

The Largest Direct Distributor of Software and Hardware Products ...in the World.

LOGIC SOFT

NAT'L CREDIT CARD HOTLINE 1-800-645-3491 PURCHASE ORDER HOTLINE 1-800-431-9037

FOXBASE. +

ONLY *245!

quarantee

_	
ATI	
EGA Wonder Board	279
HERCULES	
Color Card	155
Graphics Card Plus	189
In Color Card	325
LOGICSOFT	
 Logic (Hercules Comp.) 	
Color Graphics Board	89
Logic (Hercules Comp.)	
Monographics Board .	89
Logic EGA (IBM Comp.)	179
Logic EGA 480 (IBM Com	01249
NEC	
GB1 EGA Board	349
PARADISE SYSTEMS	
Auto Switch EGA Card	215
Auto Switch EGA 480	299
QUADRAM	
EGA Plus Graphics	319
Pro Sync EGA	349
STB	
Chauffeur HT	199
EGA Plus	249
TSENG LABS	
EVA 480	345
VIDEO 7	
VEGA (1/2 Card)	249
VEGA Deluxe (1/2 Card)	349
ZUCKERBOARD	0
Monochrome Graphics Ca	ard 85

COMMUNICATIONS E	OARDS	
5251 - 11 Plus	\$655	
5251 - 11	609	
DCA _		
IRMA Board	759	
MODEMS		
EVEREX		
Evercom II	\$109	
Evercorn 2400B Int	199	
HAYES	100	
Smartmodern 1200	309	
Smartmodern 1200B		
w/Smartcom II	369	
Smartmodern 2400	465	
Smartmodern 2400B		
w/Smartcom II	465	
LOGICSOFT		
 Logic (Hayes Comp) 120 Internal Modern 	89	
 Logic (Haves Comp.) 120 		
Baud External Modern	129	
★ Logic 2400B Internal Mo	riem	
2400B w/Software	199	
 Logic (Haves Comp.) 24 	00	
Baud External Modern	229	
MIGENT		
Pocket Modern	159	
PROMETHEUS		
Pro-modern 1200	215	
Pro-modem 1200B	139	
1200B Lacton Modern		
(T1100 Plus)	299	
(TTIDO PIUS)	299	

VEN-TEL 1200 Plus 249 PC Modern 2400B Half Card499 ZENITH 1200B Laptop Modem 299

MOUSE INPUT DEVICES PC Mouse w/DR Halo 2 \$119 MICROSOFT Microsoft Mouse (Senat) 129 Microsoft Mouse (Buss)

119

115

\$169

159

469 569

609

739

SURGE PROTECTORS TRIPPLITE Isobar 8-15 \$65 Isobar RM 8-15 w/RM 69 CURTIS 29 59 Diamond KENSINGTON MICROWARE Masterpiece QE. Masterpiece Plus 119 LOGICSOFT * Logic Spike Bar Logic Spike Block

KEYBOARDS KEYTRONIC 5151 (Deluxe) 5151 (AT&T) KB 101-1

Power Mouse

MEMORY STORAGE OMEGA Bernouli Box (10 + 10) \$1449 Bernouli Box (20 Mb) 1299
Bernouli Box (20 + 20) 1899
Bernouli 10Mb Cartdg Tripak 169
Bernouli 20Mb Cartdg Tripak 255

HARD DISK DRIVES MOUNTAIN COMPUTER Hard Drive Card (20 Mb) \$565 Hard Drive Card (30 Mb) 639 MINISCRIBE Complete Line Low Price Call! PLUS Hard Card 20 Mb Hard Card 40Mb SEAGATE 20 Mb 1/2 Ht Int

30 Mb 1/2 Ht Int

20 Mb Full Ht

30 Mb Full Ht

40 Mb Full Ht

80 Mb Full Ht 1079 CARTRIDGE TAPE BACK-UP SYSGEN Image Tape Backup 20 Mb Int \$599 Image Tage Backup 20 Mb Ext 699

Dollars N' Sense

FINAL PRICE

AFTER \$10 REBATE

Microsoft Mouse **Buss, Version**

FINAL PRICE AFTER \$15 REBATE

LIMITED TIME ONLY! LIMIT-10 PER CUSTOMER

385

549

TECMAR QIC 60 AT (Int.) 1239 QIC 60 Ext Tape Backup 1599 QIC 60 Host Adapter Card 125

FLOPPY DISK DRIVES Panasonic 360K ½ Ht \$109 Tandon TM - 100 360K ½ /Ht 99 105 Toshiba 360K ½ Ht 105 Toshiba Ext 5 25 360 Drive 389

BACK UP POWER SUPPLIES DATA SHIELD 200 Wt (PC) \$249 300 W OT 359 500 Wt (AT) 800 WI (AT LOGICSOFT

LOGIC 325 Wart 305

5 YEAR UNCONDITIONAL WARRANTY ON * ITEMS

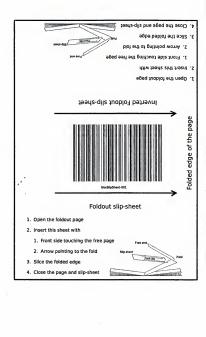
Each product carrie our 5 year uncon-ditional replace or repair warranty. identifies our Logic line of

computer hardware products. They are fully well below the major manufacturers You save not by our use of nexpensive labor and parts - but through state-of-the-art technology

* Logic 450 Watt

* Logic 675 Watt

* Logic 1000 Watt



J. Follow instructions on the other side

Inverted Back



Back

1. Follow instructions on the other side

money-back

LASER PRINTERS Laser Printer LBP8A1 \$1899 aser Printer LBP8A . 2899 EWLETT PACKARD 1949 PLOTTERS' HEWLETT PACKARD 74750 \$1629 7550A 3275 HOUSTON INSTRUMEN

DMP 40 MONITORS' AMDEK Color 600-S \$335 Color 722 Color 725 149 410A Color Monitor 8513 . 499 Monochrome Monitor 8503 225 Enhanced Color Display LOGICSOFT 599 RGB 14* 89

Monochrome 12" NEC PRINCETON GRAPHICS RGB HX - 12 RGB SR - 12 Amber Max 12 MITSUBISH Diamond AUM 1371A

559

569

159

629

12" MONO 14" CGA 1/F EGA 1/ Ultraecan

MULTI-FUNCTION BOARDS AST RESEARCH \$199 Six Pack Premium (512K) x Pack Plus (384K) 199 Rampage w/256K 275 Rampage 286 w/512K Advantage (128K) . I/Ø Mini II BOCA RESEARCH BOCARAM/AT (w/128K)

429 349

COMPUTER PERIPHERALS Half Pint I/O chiever 512K

349 LOGICSOFT 165 ★ Logic Board EMS PC ØK

* Logic (AST Compatible) 105 Multilunction Board w/0K w/384K

LOGIC EMS AT OK Logic (AST Compatible) AT Multifunction Board w/ 128K (Expandable to 20 Mh) 195

99

99

299

Logic (AST Compatible) 576K RAM Board ½ Card M\QK 45 w/384H 119 w/576H 145

★ Logic (AST Comp.) I/O Mini Half Card 85 QUADRAM Quadboard (384K) 165 Silverboard (384K) 345 INTEL Above Board Senes

(PC) w/64K (PS/PC) w/64K (286) w/512K 349 (PS/266) w/512K (PS) 256K 370 8087 - 2 Math Co - Processor 179 8087 - 3 Math Co - Processor 125 80287 Math Co-Processor 100 80287 Math Co-Processo 8 MHz 269

80287 Math Co-Processor 345 **TURBO CARDS** INTEL Inboard 386 / AT \$1249 MAYNARD Surprise 286 879

Jan 386

iny Turbo

Turbo EGA

LOGICSOFT

Accelerator 286 GRAPHICS BOARDS AST

3G+ . 239 review Six Pack Premium/ EGA Senes Low Price Call!

CUSTOMER SERVICES

30 DAY MONEY-BACK GUARANTEE

We stand behind what we sell. If for any reason you are not satisfied with your order, simply call for a return authorization number for a full refund of product purchase price, replacement or credit within 30 days of receipt of order. Product must be undamaged in original package and contain all documentation and its unexecuted warranty card. (Due to certain manufacturer copyright restrictions, some items may not apply.)

LOGICSOFT



CURRENT VERSION GUARANTEE We carry only the latest versions available and guarantee to ship the version quoted to you

TOLL-FREE CUSTOMER SERVICE One on-line mainframe allows instant access to customer and product information

SAME DAY SHIPPING

Because we are the lergest direct distributor we stock the most popular products in-depth so we can ship same day to get your order to you fast.

A MSC INTERNATIONAL COMPANY 110 Bi-County Blvd., Farmingdale, NY 11735





For instant processing of your credit card orders

1-800-431-9037 Our terms customers can be assigned a personal account executive and may PURCHASE ORDER



considerations

porting schedule. For budgeting purposes, the system displays your chart of accounts; then you simply enter the budget amounts for the appropriate accounts and time periods in your system.

General Ledger has basic accounts receivable and payable capabilities. Separate Accounts Receivable and Accounts Payable modules, however, are available and recommended for companies with exten-

sive accounting needs. Setting up Accounts Receivable is straightforward. For each customer, you enter descriptive information and payment terms (in number of days). Ready-to-Run does not allow for discounts. The program automatically assigns a number to each customer in sequential order. Each time you enter a transaction, you must input the customer account number; the system then displays the customer name for verification, at which point you enter the account to be credited, customer purchase order number, job number, invoice date, and invoice number. Ready-to-Run does not allow duplicate numbers.

If you want to print an invoice, Readyto-Run prompts you for a shipping address, an amount, and other information. To record payments received, you again input the account number. The system lists all open invoices, and you indicate whether it should apply the receipt to a specific item or to the open balance. You can print a transaction register for each session and make corrections, if necessary, before posting the transactions to the General

Ledger. Accounts Payable operates much like Accounts Receivable. To run checks, you verify the date and then enter the period to be posted and the cash account number. Next, you select items for payment based on vendor or time period, or you can pay all open items. The system responds by displaying items that meet your criteria. You can hold selected items or make partial payments. Once a payment amount for an item has been established, Ready-to-Run prints the check.

FREQUENT PROMPTS Both Accounts Receivable and Accounts Pavable offer several reports, reflecting activity by period, customer, vendor, or job number. The modules also contain a Sales/Pur-

chases journal and can produce an Open/Aging report. Yet summary aged trial balances in the traditional format are not available. In addition, many of the reports lack totals, so it's difficult to tie them into general ledger balances. Also, most of the reports are time-consuming to prepare. since you must respond frequently to many prompts.

For an accounting system based on 1-2-3, Ready-to-Run is clearly sophisticated. Its edit procedures and audit trails get better-than-average marks, but its reports are somewhat limited and its operation a bit rough. The payoff comes only after you invest the time to learn all the aspects of the program and set up your accounts and reports. Then Ready-to-Run is a powerful

accounting system for the money. -Marianne L. Meyers

RealWorld 4-in-1 Basic Accounting

RealWorld Corp.'s target market for Real-World 4-in-1 Basic Accounting is the small business with less than \$2 million in annual revenues. But in the real world, the \$595 menu-driven package is adequate for a business with up to \$10 million in annual revenues. (RealWorld's system for larger businesses, RealWorld Accounting System is also reviewed here.)

The "four-in-one" in the name refers to the four unified program elements: General Ledger, Accounts Receivable, Accounts Payable, and Payroll. Other functions included are bank reconciliation.





Accounti RealWorld Corp. 282 Loudon Rd. Concord, NH 03302-2051 (603) 224-2200 List Price: \$595 Requires: 128K RAM; two disk drives or hard disk; DOS 2.0 or late In Short: A complete small-business ac-

counting program offering many features normally found only in high-end account packages; easy to install and operate. Not

copy protected. CIRCLE 649 ON READER SERVICE CARD

check registers, and a loan amortization schedule

Even users with minimum experience in automated accounting will find Real-World 4-in-1 Basic Accounting easy to install and operate. If you have your data ready for input, you can install the system in about only 30 minutes.

You can select from three standard charts of accounts (retailer, distributor, or manufacturer) or set up your own. If you choose a standard chart, the system also loads a standard balance sheet and profitand loss statement, both of which can be customized. The program allows four-digit account numbers with a three-digit subaccount number for job costing or departmental reporting. Passwords can restrict access to each function selectively

4-in-1 Basic Accounting's data entry



RealWorld 4.in.1 Rasic Accounting offers an excellent data reconstruction utility that lets you rebuild specific files if they become corrupt. Rebuilding will repair files up to the entry you made before they became corrupt.

screens are easy to understand. Pressing the F1 key automatically brings up the next account, transaction, or invoice, and a running total appears at the bottom of the screen. You can change or delete entries by exiting to the transaction entry menu and making the proper selection. All transactions must be in balance before 4-in-1 Basic Accounting will post them. The program does not input transactions in batches, and it posts all transactions as you input them. 4-in-1 Basic Accounting prints a transaction register during posting. The system also allows you to set up recurring transactions that you must activate manually for posting.

After you've set up the General Ledger, you'll need to access it only occasionally, to activate the recurring entries, make adjustments, and print the trial balance and financial statements. A-in-1 Basic Accounting supplies an adequate audit trail—as long as your disk space is sufficient to store the data.

IMMEDIATE AND AUTOMATIC Accounts Receivable uses the customer name, instead of an account number, as the identifier. When you enter a customer name, the system verifies that it is valid. One notable feature is the immediate entry of new customers, with automatic return to transaction processine.

The program can issue statements at different frequencies, and it can print invoices for individual transactions. Optional fields include address, contact, phone number, first date (default is system date), comment, and sales rep's initials. The program can also print a customer list, which supplies account history and aging, as well as labels.

The invoice entry screen is easy to understand, and you can use up to 99 lines of description with literalized amounts. All distributed amounts are automatically posted to the General Ledger. The system also accommodates recurring sales transactions. Cash receipts processing allows for discounts, for entry of the bank number on the check to print deposit slips, and for entry of the deposit account number during installation.

Like Accounts Receivable, Accounts Payable uses the vendor name as the identifier, and you can add vendors while entering transactions. Vendor entry provides a default expense account for distribution purposes. You can distribute the entry to

multiple accounts.
Disbursement processing allows for computer-printed checks, discounts, and automatic creation of a vendor bill if the bill was not previously entered. You can print and review a checklist before the program prints checks. The program cannot accommodate recurring bills and disbursements automatically, and it does not track 1099 forms, but the vendor list gives year-to-date amounts for each vendor.

The documentation covers the menu screens step by step and is reasonably complete. 4-in-1 Basic Accounting also includes a report writer for defining financial statements and other reports.

RealWorld4-in-1 Basic Accounting offers features similar to those of several high-end accounting packages. Small businesses can get a lot of real-world accounting value from this value-packed basic program.—Rex M. Vincent

Shoebox Accountant

CYMA/McGraw Hill, long known for its accounting packages, has introduced a \$395 low-end accounting package called \$hoebox Accountant. It's a single package containing simple General Ledger, Accounts Payable, Accounts Receivable, and Pavroll modules.

Installing Shoebox Accountant is simple; it takes only about 5 to 10 minutes. Setting up the modules also goes fast. During setup, you can assign a three-character





Requires: 128K RAM, two disk drives; DXS 2.1 or later. In Short: Strople low-end package with budgeting capability and possword protection. Limited features. Not copy protected. CREAT BY CHARGES BEACH CAMP.

password to each module if you like. The system comes with a standard chart

of accounts, predefined journals, and payment terms codes, all of which you can use or replace with your own entries. The chart-of-accounts code is a four-digit account code followed by a four-digit subsidiary code that the system assigns. The modules use the subsidiary codes for customers, vendors, and employees.

When you set up an account, you give it a predefined classification as well as specifying a balance forward and a description. You can add account codes at any tidenting system operation, as well as delete them if they have a zero balance. In addition, Shoebax Accountant's budgeting capability allows you to maintain up to four different budget amounts per account.

All transactions are organized into a set of journals that you set up initially. Whenever you enter a transaction, the system

"mainte studies" (1995"

Tentino Relati (1995"

Tentino Relati (1995")

Tentino Relation Relation

Tentino Relation Relation

With Shoebox

Accountant, you enter the letter F to edit or ''fix'' information in a customer's record.

ACCOUNTING

asks you to identify the journal in which the transaction should be recorded. This procedure controls printing of the transaction should be recorded. The isosport to posting. But when you decide to post your transactions, all journals are posted together, including those from the General Ledger, Accounts Payable, and Account Receivable modules. You cannot hold transactions from one module while completing another module's transactions.

PAY CLOSE ATTENTION Since Shebox Accounted foos not generate any inestral transactions, it cannot handle recuring or reversing journal entries. In addition, although the program is date sensitive, it does not use a periodic accounting calendar, so the periods defined are at your discretion. For each financial account, the General Ledger maintains a balance and a record of the postings made since the last update. You must pay close attention to how transactions are related and their date.

General Ledger reports include a list of journal entries, a list of accounts in ledger format, a funds flow worksheet, destaid and summary trial balances, and a balance sheet and income statement. The program calendar date, and by a user-defined document number. Three types of financial statements are available: a standard statement, a budget-type statement comparing the budget to standard with variances, and a comparative statement allowing current changes.

changes. With the Accounts Receivable module, you can create and maintain customer information, enter sales order data, print and review these transactions, post entries, and print several other reports. The program can handle customer accounts on a balance-forward or an open-item basis.

You enter billings through the Print Invoices function. The system first requires you to set up a six-character product code for each item, along with a price. Although the billing function is simple, it allows you to define each line of the invoice and add a message of up to 19 lines at the bottom.

The Accounts Payable module mirrors the simple operation of the Accounts Receivable module. Although you can make changes to each invoice before posting, the program gives you no indication of what has been posted and what hasn't. No check preview listing is available for you to review before printing checks. The module produces check registers, an accounts pay-

Like a macro program, the program's autopilot remembers your keystrokes. It enables you to store options for formatting reports with special titles or messages, avoiding the sometimes annoying prompts. The program also includes a helpful tutorial. The manual is brief and to the point.

able ledger, and an aging report.

Shoebox Accountant is a workable yet simple package. It offers password protection, a unique autopilot option, and a budgeting capability, but it is limited in its ability to handle some transactions automatically.—Gail Horowitz Rosen and

Jay A. Rosen

TAS Books

TAS Books, from Business Tools, consists of General Ledger, Accounts Payable, Accounts Receivable, Order Entry, Inventory, Purchase Order, and Payroll. At a cost of \$99, this package gives you one of the best price-to-performance ratios

It comes with a database that can be used to add or change screens, functions, and reports. You use a batch program to install the package. You can quickly set up a company through a chart-of-accounts screen that is easy to understand and use.



You must work through a second screen, though, to load data from the previous year.

Life becomes more complex, however, after you load your chart of accounts, vendors, and customers—largely because the manual is formatted and indexed by screen functions and doesn't give enough detail to

The package requires that you have some knowledge of accounting. It offers no sample reports and no help on setup procedures (for example, how to input beginning balances).

answer most questions.

For the accounting purist and those who are strong on management reports, TAS Books is a bit weak. There is no detail trial



TAS Books has a lookup window for customer numbers and names in its Accounts Receivable module. You can also use this screen to enter information on new customers.

WHISTLE WHILE YOU WORK.



Cheese bron one wide contr of applicables Cheese from our wall control of applications, tolked only a constraint, evidents, dock peri-tal and artifacts, depreciation packages, load unabout, and budget only orders. THE COMPLETE BUSINESS PAC TO THE COMPLETE BUSINESS PAC for combal mobile for all your

 General Leight Payrell Accounts Accounts Family a horotony 599.95 Altho mast bectomin reduction, which is not maintained to continuous, which is not maintained to the continuous of the continuous and the continuous of the STOCK PAC

Stack Market Assayes:

Cash Market BATOGET ANALYSIS PAC Per accomplists, executes and must be execute that want to proceed professional findements to

CHOICE 14900

sates or its ...

MANAGEMENT - o

GREAT NEWS FOR LOTUS AND SYMPHONY OWNERS. Statements + Financial Return + Coll.

Bodge Analysis Pac PERSONAL BUSINESS PAC personal use

• Check Reguler Custool • Tokeyhous Bases

tery • Malling List Namadon • The Essantial

Home Incompliant • Credit Card Namador •

Basis Account Namador LOAN APPLICATION PAC

COAN APPLICATION PAC
Calculates and prote all entered, moretage and
sames calculations.

Lean hard sames Schedule + New Solid
put Esting Calculation at 1 a 4 per Real Editor Calculation • Cash Flow Analysis • Process Property Population • Lorest ment hours a Lease

Lank Application De.

DEFRECULATION PAC.

Professor di struduali Ris-accorde depreculation.

Chichalismo ad approachi Cana September reports.

Chichalismo ad processor di Cana September (Lank September 1997).

Lank Paralle Lank Depreciation — September (Lank September 1997).

The Nation September 1997 (September 1997).

The Nation Sep Depreciation Pac.

PROFESSIONAL

TIME AND BILLING

SYSTEM

If you bill he have as services, this is the perfect automated substant. Thus

package outsperforms any other resis class.

System your chesce today.

pachage outpersons any other to no cause.
The choice of Montrors, Accountants, Architects, Consultants, Doctors and other professionals tank forms who hall for turne or services.

PROPERTY MANAGEMENT SYSTEM

for managers of commercial and residential properties. nde drakmigert de commitées de man establishende programme.

IES eans to une, given voor an instant status verport on any provertry copiaises as controller accommission de commitée de commitée de commitée de la committée de la commitée de la committée de la commitée de la committée de la committée de la commitée de la commitée de la commitée de la commitée de la committé de la commitée de la commitée de la committée de la committée de la commitée de la committée des la committée de la committée des la committée de la committée de la committée de la committée de la committée des la committée des la committée des la committée de la committée des la committée des la committée de la committée des la committée scal records. Reports

· Property Beyor's · Lease Reports Transition Reports
 Transi Activity Reports Accounts Recreate Agent Reports

THE VERSA BUSINESS SERIES VERSARECENABLES ... \$99.95 A complete accounts receivables, more transfer, and morehby statement Automate the most expertant part of your business with the most fixed-ble accounting series on the market. system that tracks all reformation related to who ower your company or together in any combination to

A complete payables system that tracks all current and aged payables, below manufer year, and aged payables, you on top of how much query; form a complete, coordinated spitions a complete, coordinates 500-ten for Retail, Service, Manufacturrem are recular, very rec. manual ever ing. Instrinction, or any becomes VERSALEDGER II. 5149.95
A complete general ledger that can
be oned as a personal checkbook refe-tator, small beatered beather. Acres constituted concer VERSALIVENTORY. An trotain access inventory for grain that gover you vertually system of larger corporate general ledger system without any side. gram your goes you capacity an

record software.

VERSAPAYROLL
A furth automated payord ordered.
Body automated payord ordered.
Body processing and case to use.
Tracks all autocurrenced, recordappeals autocurrenced, recordappeals autocurrenced for course
and a processing ordered for course
and a processing ordered for course
and a process checks and ecladed
from.

orands sand sensit with hid for time on services.

• Automatics if billions.

• Designed of the little of the litt Sure limit and recent by making the treatest Professional Time and tidated. Another business solution from Computronics.

Order from this page or choose from IGO,000 items for immediate delivery. Call for your FREE software catalog

CIRCLE 260 ON READER SERVICE CARD

COMPUTADNICS 46C Route 303 Valley Cottage, NY 10989 914-268-8866

(INSIDE NY STATE)

(OUTSIDE NY STATE) 1-800-431-2818



30-DAY MONEY BACK **GUARANTEE**



"!@#%&!.. I'm Getting the Ultimate Forms Generator!" EZ-FORMS EXECUTIVE®

Now with Screedsheet Style MATH - Automati <u>Database MERGE</u> - Uses any database or spread-sheet program that produces presoned ASCI files. Chainfincrement Printing - Queue up forms and welk every; use sequential numbering, if desired. Never be without the perfect form again. Here purchase orders, expense reports, applications, or any of DVER.101 popular ore designed forms instantly.

*Customize or mostly our handy forms or, design is

your own and put your local types Your printer will also be very happy.

 Make boxes, symbols, combs, blocks, and shade areas with the greatest of ease. e Fill out internal or preprinted forms error free too. e Easy to use - even the "BOSS" can use it!

Create custom forms from scretch - like a pro. Context sensitive on line help futorial/manual. The guick and easy manual is written in "English", but you will probably never need it.

 Down features include: text was, auto numbering, auto detertime, "well-sround graphics", shading, block operations (copy, move, deteis, justify, center), read-to/write-from disk, import/seport forms. clear overlay for pre-printed forms, boldfacing, un-defining, super & subscript, Italics, double size, compressed, custom user print attributes, etc. EZ-FORMS EXECUTIVE® requires 384K RAM, DCS
2.1 or later, any monitor. Supports most popular
printers including the HP Laseciel* and close com-

palibles ("" font cartridge has full capabilites, other cartridges very. For Plus and Series II, we provide e downloadable font). Not copy protected for easy hard drive or micro-floppy installation. e 30 day <u>satisfaction guarantee</u>! (20% rest · Evaluation Disk with Manual is only \$20

FORMS DISK #2 now available - over 105 more useful forms. Regular price is \$39, Special - only \$20 when purchchasing EZ-FORMS EXECUTIVE. ONLY \$89 COMPLETE!

les manual, phone support, & shipping. Add \$5 for 2nd day air & Canada, \$15 for overnight (USA-48 only), or foreign orders. Texas addresses must add 7.25% sales tax. VISA/MC/AX/Optima/LIS-Checks OK. Orders/Information, Call:

(713)-338-2238 Charge Card Orders Call: (800)-999-6999 ext. 999 Dealer, multi-copy, and site lic

quiries welcome. Ask about EZ-SPREAD-SHEET(\$49), and EZX-MENU(\$44). 0 1967, EZX Corp., 403 NASA 1E, Webster, TX 775

■ ACCOUNTING

balance or period-to-date transaction listing for Accounts Payable and Accounts Receivable. One particular screen allows out-of-balance entries that do not show on the detail general ledger trial balance, but that do affect the financial statements. I recommend that you use the password protection offered in the package to lock evervone out of this screen

TAS Books uses real-time or on-line processing, which means that all modules are updated as new information enters the system. Reversing improper entries in real time can be inconvenient, but the program helps overcome that problem by letting you make reversals through the same

screen you use to enter the data. The package offers multiple-company



 Bedford Integrated Account · Dac Easy Accounting, Version 2.0

Version 1.0 of Dac Easy Accounting, from Dac Software, was a pretty good buy when it appeared on the market in 1985-even if it did lack a few things like a standard balance sheet and income statement. In Version 2.0 Dac Software added new functions and features and kept the \$69.95 price, and now the program's not just a good buy-it's a great one. Then, too, there's Bedford Software Corp.'s \$249 Bedford Integrated Accounting. This is truly a system. Bedford's six modules, which include Job Cost, Inventory, and Payroll, are easy to install, easy to use, and so well integrated with

one another that it makes accounting a snap-even for nonaccountants

Also noteworthy is Real World 4-in-1 Basic Accounting. Real-World Corp.'s 4-in-1 is a \$595 package with some limitations, but nevertheless it can handle the books for businesses with revenues as high as \$10 million.

AS Books gives you a choice of screen, file. or printer output for reports. The payment selection for Accounts Pavable is easy to use

and screen-intensive.

canability, but none for cost centers or departments. Context-sensitive help is available in some screens. Also you can add vendors and customers while in the voucher entry or sales entry screen, and there are windowing capabilities that allow you to look up general accounts, customers, vendors, and invoices. The lookup function, usually found only in much more expensive accounting packages, is well done and easy to use.

TAS Books also gives you a choice of screen, file, or printer output for reports. The payment selection for Accounts Payable is easy to use and screen-intensive. There is a preliminary check register for payables, and cash receipts for receivables can be automatically applied to the oldest invoice first; alternatively, you can use lookup windows to view the status of the account.

The package has some weaknesses. Manual checks have to be entered through the General Ledger and there is no onscreen inquiry on account activity for both customers and vendors. TAS Books has no form alignment function to ascertain if your invoices and checks are properly aligned, and the General Ledger cannot handle recurring entries.

TAS Books is a good accounting package with some advanced features, but firsttime users should probably avoid it. They will get little help with their questions from the sketchy documentation. -Wayne Harding

Recent PC announcements have left Compaq ın an enviable position.

Compaq still

n the midst of the clamor surrounding the new IBM* PS/2 personal computers, one thing is perfectly clear to people who really know PC's. COMPAO* personal comput-

ers still work better. They enhance your productivity within the industry standard, and give you maximum performance from the world's largest library of business software.

different storage devices on all COMPAQ desktops.

Examine compatibility. We let you use all the industrystandard software and expansion boards that you already own.





Demand for the 12-MHz COMPAQ DESKPRO 286 has nearly doubled since the PS/2 introduction.

Still the performance leader

COMPAQ personal computers prove superior in overall performance.

Take speed. The COMPAQ DESKPRO 286⁺ runs your software up to 20% faster than its PS/2^{2m} counterpart. And, the COMPAQ DESKPRO 386^{-m} sets all records for speed in advanced-technology, industrystandard personal computers.

Consider flexibility. Compaq offers 5¹/₄" diskette drives, and allows you to add 3¹/₂" drives. In fact, you can add up to four The I2-MHz COMPAQ PORTABLE III is the smallest, most powerful full-function portable there is.

Look at expandability. Our industry-standard slots enable you to add many extra func-

tions. So you can configure your system exactly the way you want it.

Finally, compare portability. You can't. The 12-MHz 80286-based COMPAQ PORTABLE IIITM is the undisputed

leader. It offers the

COMPAQ fixed diffuses

ed disk drives access data up to 2½ es faster than PS/2 drive

performance of a desktop without any of the compromises you'll find

in other portables. Compaq applies innovative technology within the industry standard, without sacrificing compatibility.

Earn higher returns on your investment

American business has \$80 billion invested in

It still simply works better.

works better.



the current PC standard, including 72 million software and hardware products, and hundreds of millions of hours in training.

Compaq designs its computers to protect your investment. And because they do more, they also maximize it.

Compag has become famous for its legendary compatibility

sonal computers will run thoubytes of memory. And they'll run all the applications developed for OS/2™. Again, much faster.

We don't burn bridges, we build them

At Compaq, advances are measured by our ability to push technology forward, without leaving you behind.



COMPAQ computers let you incorporate developing technology, and take advantage of the latest technology in a way that's fully compatible with the hardware, software and add-ons you already own. So Compaq protects your investment.

These are all reasons why recent surveys show COMPAO owners are the most satisfied personal computer users.

Call 1-800-231-0900, operator 39, for information and the location of your nearest Authorized COMPÃO Computer Dealer, In Canada, call 416-449-8741.

cation, far faster than other computers. And they work with all the other

compatible computers in your office, without time-consuming diskette conversions.

As for the future, all 80286and 80386-powered COMPAO personal computers will run the new MS OS/2 operating system, allowing you to directly access up to 16 mega-

COMPA

It's Hard To Build A Successful Business Without The Right Connections.

If your business doesn't have the right communications system, you could be losing valuable customers. Without even knowing it.

It may be time to contact your nearby Sears Business Systems Center. We can analyze your present system from top to bottom. So you'll find out exactly what you need. And exactly what you don't.

If it's time to update your system, we offer the latest in voice and data communications. Whether it's a facsimile, a telephone system, or a local area network, our systems engineers will help you plan how to manage it.

And no matter what you buy from Sears Business Systems

Center, you'll always receive dependable service.

For the one nearest you, call 1-800-533-2535. Or in Illinois, call 1-800-428-2426.

Now is a good time. Because if your communications aren't working for you, they're working against you.

SEARS Business Systems Center



Tailor-made Ledgers

Ashon-Tate's dBASE has shipped over a million copies and Accounting packages reposent just one type. Most people familiae with dBASE know of Nantucket's Clipper, which compless command files for greater speed and portability. The report writer in Alpha Software Cop's Alpha's, which uses dBASE files without modification, can during the command files of the command
dBASE accounting packages find a market because of their easy use of data files for custom reports, and the ability they give the user to customize the program. dBASE it is required for using these programs in their source versions, although the packages also typically come in compiled versions that can be run without dBASE III.

Law Cast Medical Conference of the Conference of

Customization, however, is not without a number of risks. Many users find that their needs are nut by the standard features of a package. The language of a program is not significant to users who want a system to work without modification of the system code. The quality of the internal system design and the hardware that you use affect system performance at least as much as the

choice of the language.

Many users customize their program to create an order entry or billing system unique to their company and to create records that can be added to the accounting system without having to be retyped. — —Timothy J. Lee.

AccountMate

AccountMate, from SourceMate Information Systems. a feature-filled formation Systems. a feature-filled formation Systems in a feature-filled formation of the user friendly. You don't need to width MSE to use AccountMate, but dBMSE to use AccountMate, but dBMSE for the Central Ledger, and in the 3259 price of the Accounts Payable and Accounts Receivable modules. With the source code, you can use standard operations. Account-Mate should bring smiles to any bookkeeping staff.

Every menu option has a corresponding chapter in a manual that's enlivened by meaningful graphics, icons, and screen some control of the chapter in a manual that's enliqued in an idea, it is absonce is never felt. Browsing through the manual may not even be encessary, since the menus are well designed and include on-line descriptions of each selection.

You can initiate inquiry into general ledger accounts, customer and vendor codes, and invoice numbers by entering "?" in any field awaiting input. Typing "SMI?" displays all Smiths, followed by

stems Inc 20 Sunnyside Ave. Mill Valley, CA 94941 (800) 228,8896 (800) 762-7788 (in Calif.) List Price: General Ledger, \$495; Accounts Receivable, Accounts Payable, \$295 each. Also available: five other modules; multiuse version. dRASE III source code included. uires: 512K RAM: 10-Mbyte hard disk: DOS 2.0 or later. In Short: An easy-to-run, full-featured system with excellent documentation and perforance. Included source code and dBASE files make it a natural for custom modification. Not copy protected.

all Smithes, and so on. Data entry screens are easy to read and consistent in format. You don't have to worry about making an irreversible error because each operation offers an escape route—a real confidence, and competence booster.

Creating a new hart of accounts, copying it to a second company, and adding the
budget and beginning balances takes a little over an hour. Each account's budget
figures are promptly apportioned once you
supply the yearly total. Complete screens
and individual fields are easily entered or
revised by the full-screen editing feature of
ARSE JII.

All postings are automatically reversed, and the program requests confir-



AccountMate's screens are clearly defined and easy to edit. Invoices show a customer's credit limit and balance. mation whenever an account with a normal debit or credit balance is posted with a "wrong" amount. You can odit any posting in the current batch before it is permanently added to the books. You can even change a double entry to a multiple entry. The ledger allows adding new accounts during posting, so you never have to back out of the posting screen because of a miss-

ing account. The Accounts Receivable module comes complete with an inventory system for detailed invoicing. If desired, each item may be assigned a separate sales and cost account, thereby enabling tight control over profit and cost centers. Customer accounts may be entered with different shipping and billing addresses, and terms, discounts, and the option to bill finance charges are all user defined. Most of the statistical information you could want is instantly available for both customer and inventory. Invoices may be altered after printing-a feature missing from many packages. You can omit paid invoices from statements, and you have the option to print statements for one customer, all customers, or only those with balances. Even UPS COD tags may be printed.

COMPARING VOLCHERS Vendors are assigned up to 30 default expense accounts, which are mude available for distribution at the time of voucher entry. This is a boot when paying credit and charges the control of the cont

Most reports may be viewed on-sercen, Many have Sort and Date Range options, and all are formatted for 80 columns. While General Ledger reports may be printed for any period, comparisons beteen a series of the control of the technique of the control of the technique of the showing who owes what and for how the showing who owes what and for how period of the program would have benefited if SourceMate had included the customer contact. as well as the contact's more contact. as well as the contact's notice. number. There is no report writer, but AccountMate uses dBASE III files, which allow you to create special reports by using either the dBASE report writer or one of the many dBASE add-on products.

The program is surprisingly quick. Life tool just fast for diASE—it's feat. The mobiles supplied are Clipper compiled, and, on an AT compatible, moving between menu options is almost instantaneous. The completed code's small size is indicative of efficient programming. The sample source code fragment follows generally accepted dBASE programming practices and is easy to follow. The source is and sea by the following the sample source code is included in the price of each module, as is free support for all registered users.

pacity in the General Lodger for the Fortume 500. The reports aren't flawless, and dBASE file sizes grow like Topsy. But Architecture for the size for the size of the sizes and and well worth in purchase and well worth in the new formation of a large corporation. This package for any small produce of the size of

AccountMate may not have enough ca-

Assistant Controller

Assistant Controller, from Lake Avenue Software, is a dBASE III accounting package that is compiled in Clipper for speed. The modules, designed and written by CPAs and priced at \$595 each, include the General Ledger, Accounts Payable, Ac-

List Price: General Led-

abe, and Accounts Perpulse. 59% each, Also available, six other modales, multisser version.

Requires: 364 K AM, DAS 2, 1 or later, Pland dels recommended. 48645; III Plan required in operate source code version, no 400-XF required for compiled version.

MASSE required for compiled version.

Massing and an advantage of the compiled services, periodic period

counts Receivable, Payroll, Inventory, Job Cost, Order Entry, Financial Reporter, and Time Billing. Source code is available for all modules.

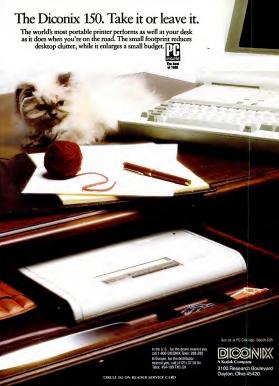
Since the system asks you for certain account numbers during setup, it is wise to design your chart of accounts ahead of time. Assistant Controller can maintain information for up to 1,000 leations/departments. Each location must have its own chart of accounts defined. Location/department(0) is used for consolidations.

Assistant Controller requires five-digit account numbers. To use the financial-reporting capabilities of the General Ledger, you must set up your chart of accounts within the following structure: 1xxxx =



Press (Setore) to Add Second, (C)bange, or (S)tart Over: _

Entering invoices with multiple account distributions is a clumpy task with Assistant Controller. The general ledger account number is buried in the middle of the screen, with invoice number and detat located at the bottom.



700

Summary of Features: dBASE Accounting Packages (Module Prices and Extras)

235	AccountMate	Assistant Controller .	Champion Iti	dPROGRAMMER	Accounting Library
Basic price*	\$1,085	\$1,785	\$1,185	\$295	\$1,185
General Ledger	\$495	\$595	\$395	\$295	\$396
Accounts Payable	\$295	\$595	\$395	Included	\$395
Accounts Receivable	\$295	\$595	\$395	Included	\$100
Payroll	\$495	\$595	\$395	N/A	\$395†
Fixed Assets	N/A	N/A	N/A	N/A	\$295†
Inventory	Included	\$595	\$395	N/A	\$295
Job Cost	\$795	\$595	\$395	N/A	\$395
Materials Management	\$995	N/A	N/A	N/A	\$395
Purchasing	\$195	N/A	N/A	N/A	\$295
Report Writer	N/A	\$295	\$249	N/A	N/A
Sales/Order Entry	\$195	\$595	N/A	NA	\$295
Sales Analysis	N/A	N/A	N/A	N/A	N/A
Time Billing	\$395	\$595	N/A	N/A	\$395
Network version	•	•	0	0	•
Networks supported:					
3Com Corp.	•	•	0	0	•
Novell Inc.	•	•	0	0	•
IBM Corp.	•	•	0	O	•
Multiuser version	•	•	ō	ō	• 1

This O—No N/A—Not applicable: module not offered. "Basic price is the combined cost of the three single-user General Ledger, Accounts Psychie, and Accounts Receivable modules shown have by comparison. What evaluation is multiple service."

Assets, 2xxxx = Liabilities, 3xxxx = Equity, 4xxxx = Revenues, 5xxxx = Cost of Goods Sold, and 6-9xxxx = Expenses. If your company uses a unique chart of accounts, you may find this mandatory account structure restrictive.

MENU STRUCTURE Lake Avenue Software claims that people who have never worked with accounting software before find the system's menu structure easy to use and understand, but I found it to be backward. For example, instead of (1) Add, (2) Change, Delete, or Review, and (3) List being submenu choices under Entering Transactions, Assistant Controller elevates these choices to the main menu. with (1) Transaction File and (2) Chart of Accounts File being submenu choices. In addition, the line numbering of the same choice name (for example, Chart of Accounts File) may be different within the Add and List submenus. Loading the chart of accounts is fast and

easy. The system asks for only four types of information: location/department, General Ledger account number, account title, and beginning balance. But Assistant Controller could do a better job with error trapping during input. The system tested lets you enter duplicate information (account, vendor, and customer numbers), even though it beeps a warning. Lake Avenue Software says that a May 1987 update corrected this problem.

oading the chart of accounts is fast and easy with Assistant Controller.

If your company produces financial reports with budgets and prior-year comparative information, you will need the Financial Reporting module, which integrates

with the General Ledger.

The Accounts Receivable module is a basic system that maintains a minimum of

information. It can send transactions to the General Ledger on a cash or accrual basis. The setup routine for Accounts Receivable lets you define the number of days in each of five aging periods. In addition, you must select either balance-forward or open-item accounting for all your customers. The customer master file maintains the customer unwher, name, and address, as well as last payment date and payments/purchases to date.

Customer invoices, credit memos, and debit memos are all entered into the main transaction file. The system does not distinguish between invoices and debit memos. Credit memos are distinguished by a negative amount.

The package's Accounts Payable module is equally basic. The information that the system maintains on the vendor record is scant: vendor name, address, contact, telephone number, budget amount, payments/purchases to date, and discount taken to date. Since Assistant Controller does not maintain vendor terms for each vendor in the vendor file, you will have to calculate the discount date and payment date for every invoice entered into the system. In



Summary of Features: dBASE Accounting Packages (General Items) For an extensive summary of these packages' character-latics, see the special section "Accounting System Profiles"

	AccessiMate	Controller	Champion III	dPROGRAMMER	Library
General Ledger	E	東 等	5. 拥有的人强强的	red States option	- included and
Chart of accounts code size*	7 N	8 N	10 A	10 A	6A
Default account structure*	NNNNN-NN	NNNNN-NNN	********	*****	AAAAA-AAA
No. of predefined accounts	60	None	69	Info. not available	6
No. of characters for entry description	30	28	20	30	35
Transaction entry limit	\$1 billion	\$99 million	\$100 million	\$100 million	\$999 million
Accounting periods	12	13	24	12	13
No. of standard reports	18	30	8	12	24
Accounts Payable	5	1		83 67	172
No. of characters for vendor code	6	11	8	6	6
No. of characters for invoice entry description	10	56	Unlimited	30	35
No. of standard reports	14	20	8	3	11
	95. 6	E	-31 cfs. 81 cc.81	Landburg	dia Fares
Accounts Receivable		11	100年、後の大学の大学	- Children Confeator	CONTRACTOR
No. of characters for customer code No. of characters for salesperson code	5	3	25	0	2
No. of characters for lawesperson code No. of characters for invoice entry description	29	3 56	Unimited	30	35
No. of characters for invoice entry description No. of standard reports	29	20	Cremed	30	35
"Ship-to" address for customer	2.	0		0	
"Rill-to" address for customer	-	•		•	:
Billio address for custoffer				_	-
Installation and Setup		and the	Zán szávchkosa	- School B	Carl State of the
Menu-driven		O STATE OF THE PARTY	COST-40745 Inc. Buth	- NAME OF THE PROPERTY AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERS	F-R20BH-1776G
Includes checklist		•		0	:
Includes system operation procedures lists		:	:	0	:
includes demonstration data files		:	5	•	:
Estimated installation time (hours:minutes)	0:10	100	0:15	2:00	0:30
Comes with tutorial	0.0	0	0.4	•	
Includes on-line, context-sensitive documentation		0	•	0	:
includes data entry forms	10	0		0	:
Allows eccess to master files during data entry	-	0	•	0	•
Allows occess to master files during data entry	·	0	_	0	0
Data Security and Access	46	3 1113	out which was the	· · · · · · · · · · · · · · · · · · ·	JOHN CHES
Individual passwords		0	•	•	•
Passwords for individual modules			0	0	•
Passwords for Individual menu functions	0	0	0	0	0
Grants menu-item access rights to user	0	0	•	0	•
					100
Interface to Other Systems			100		1205
Selects and extracts data in:					
.DIF format	0	0		0	
ASCII format	•	•		0	
Other output formats supported	dBASE III.	1-2-3	1-2-3.	Info. not available	MRASE SDE
они опринива виротни	PFS III.	74.0	dBASE III. Mailmeron	neo. Incl available	Ouride, Jour
			WordStar		
Loads master file data from other systems	0	•	0	0	•
Loads transaction file data from other systems	0		0	0	•

Is this the new look of project management? Plan on it.



Our interactive Work Breakdown Structure is a more intuitive way to start planning.

We redesigned HTPM for a faster, easier approach to project management.

Even though Harvard Total Project Manager was the category leader, we knew we could make it better.

it better.

So we listened to project managers, added innovations, and created Harvard Total Project Manager II.

The result is a redesigned project management tool

that's dramatically easier to use, with more features and increased capability. You'll see the difference right away.

It starts with a more intuitive, easily accessible user interface. Then HTPM II sunjug Work Facekoom Structure gives you the opportunity to plan your project completely on screen. You also have the choice of other interactive planning formats. PERIC charts, GANTT charts and Task Lists. Only HTPM II offers all four alternatives, letting you plan the way that works best for you. HTPM II so their southern the planning formats of the planning formats when the planning formats with the planning formats of the planning formats with the planning formats. The planning formats of the planning formats of the planning formats of the planning formats of the planning formats. The planning formats of the pl

features help you automatically track resources across multiple projects, add project data more efficiently, and

keep everyone on the project up to speed with comprehensive presentation quality reporting.

We can't tell you everything about HTPM II here. We can invite you to call for our free trial disk, and find it all out for yourself. You'll see why the

new look of project management fits your style. Perfectly.





Graduate to Harvard Total Project Manager II.

For a free trial disk call 1-408-848-4391. Oper. #57. For upgrade information call 1-800-255-5550.

ians on IBM XT with hard drive and MS DOS compatibles. © Software Publishing Corporation, P.O. Box 7210, foundate View, CA 94039-7220. addition, 1099 status is marked during invoice entry rather than in the vendor file.

The invoice entry process is also a bit backward. General ledger account distribution is buried in the middle of the entry screen, with invoice number and date pushed to the bottom. Entering an invoice that has multiple distributions is awkward.

Assistant Controller's strength is its reporting abilities. The reports produced by the Financial Reporter, General Ledger, Accounts Receivable, and Accounts Payable modules are excellent. Its weakness is its user interface.—Allyn S. Vineberg

Champion III

Champion III is a real contender. A smooth, easy-to-use \$395-per-module accounting package from Champion Business Systems, it offers a fast-moving, fully-integrated system with a dBASE backeround.

nackground.

Champion Business Systems, specializing in accounting programs, has put its expertise to the test effectively in this package of the programs of the programs. It is good to be a program of the program of the Accounts Receivable and Accounts Payable modules plus a help program. The Accounts Payable and Receivable modules cannot stand alone, but you can add other modules to the basic system to

other modules to the basic system.

A careful reading of the installation instructions is all you need to make the installation go smoothly. Everything is automated. The install program on the first disk

even creates its own subdirectory.

Champion's basic acounting structure



Champion III
Champion Besiness
Syskems
17301 W. Colfax
Ave. #250
Denver, CO 38401
(880) 243-2626
(303) 278-3866
List Prices \$395 per module.

Requires: 432K RAM; 5-Mbyte hard disk, DOS 1.0 or later.

DOS 1.0 or later. In Shore: A fast-moving, fully-integrated accounting package that can compete with the hop packages in the market, yet is easy to me. Copy protection scheme less you copy disks, but the copied disk locks up after 758 transactions and rules for a security code, which is is sued to registered users or is obtainable by calling the company.

has adequate space for coding account, customer, and vendor numbers, as well as in the description and comment fields.

The General Ledger is a fully integrated program that includes a built-in chart of accounts so that you can get up and running quickly. It posts entries automatically after you set up the journals. Simply stated, the General Ledger system is first-rate.

Champion has several special strengths in its user interface and data recovery scheme. A command key brings up a belp screen on matter what stage you are in and immediately takes you back to continue the regular processing. Also, the package enables you to move smoothly and easily within and between programs. The manual gives considerable attention to Champion's valuable data recovery methods, which many programs neglect altogether.

Controls over data entry in Champion are top-notch. The package automatically verifies account numbers, wendor numbers, and other key data, cross-referencing them with other files before proceeding. In the report subroutine, Champion alerts you to quickly review the output of the accounts receivable invoices for accuracy, If they're OK, you simply hit one key and proceed, if not, you can correct any invoice errors before mailing.

Champion's weakness is in preparing reports. Its format for financial reports and budget comparisons is somewhat limited. The vendor claims that a new, scon-to-be-released version improves the package's reporting format and adds a capability for preparing mailing labels and 1099 forms. Until the new version is available, you have the option of purchasing the company's Freeway package, which offers a wide assortment of report generators.

Other Champion modules currently available include Payroll, Job Costing, and Inventory. The package's documentation is clearly written, but you'll need to invest some time and effort to understand the processing.

THE dBASE CONNECTION The package is fast on its feet; to enhance speed, the programs are all compiled versions. For that reason, you cannot customize them to any extent. But you can go outside the programs and use dBASE to generate specialized reports and perform additional analyses.

Champion III is a real pro. You can rely on it as a highly accurate on-line, real-time program, with all the necessary checks and balances. This outstanding feature transtates into reliability, swings, and confidence in your financial reports. —William Winberg

dPROGRAMMER

Developed by Sensible Designs and sold for \$295, dPROGRAMMER was designed to be used as a dBASE add-on product. The package includes such standards as General Ledger, Accounts Payable, and Accounts Reocivable modules, as well as a



The Open Order list in Champion III lets you look up order numbers and list their ship dates.



dPROGRAMMER uses unusual mnemonics for menu selection, and it uses the Return key as the

exit key.

custom applications development system.

Disappointing may be too kind a word of #ROGRAMMER. It takes advantage of very few of #BASE's capabilities and has more than a few faults. However, Hank Lautenbach, president of Sensible Designs, said that #ROGRAMMER was not designed to be a standalone accounting package, but is normally developed for specific applications after purchase. He said the company has no plans to enhance the said the company has no plans to enhance the MER if new versions of #BASE are re-

dPROGRAMMER's italic-text manual lacks an index and gives instructions on installation with dBASE II rather than III. Lautenbach said that the instructions for installation with dBASE III are contained in a separate appendix sold with the program. However, the appendix was not included in the package we reviewed. The instructions in the manual we received assumed you were using a CP/M system with two floppy disk drives. Following these instructions would have made the system fail because of syntax differences between dBASE III and dBASE III.

When we called Sensible Designs to see if a dBASE III version of the manual was available, the call was not returned, as were all subsequent calls to the vendor. Not so sensible. Lautenbach contacted PC Magazine after editors, who were also unable to get a response when they called the company, sort a letter to Sensible Designs.

expressing concerns about the program.

dPROGRAMMER's menu system is
unusual: you select options by typing multiple-character mnemonics. Those who
count keystrokes will find this system
slower than it should be.

Data entry is also different—and bothersome. When you enter your own data into the General Ledger chart of accounts, you must change dPROGRAMMER's sample data to yours rather than setting up another company file.

INSECURE FELING APROGRAM.
MER's controls are so lax that any internal control would depend almost solely on the integrity of your personnel. You can change the secount number, name, and balance at any time during the year, and you can also change the budget allocation and the type of account. Remarkably, you could easily to a second a center of the second and the type of account. A count and leave absolutely no audit trail of the entry.

After verifying that you have entered the chard of accounts correctly, you must confirm that the accounts are in balance. Since aPROCHAMER has no option for Since aPROCHAMER has no option for the control of the chard property of the control of the chard property o

ables, as was the case throughout the system, we found that dPROGRAMMER used only a limited number of dBASE's capabilities. The program lets you allocate each check and invoice to a maximum of only six accounts. Also, you can assign each check and each cash receipt to just one invoice.

Essentially, dPROGRAMMER is a system for accumulating your manual records into a report format. It is not an accounting system capable of generating records. Neceivable can produce management aged reports. Accounts Payable does not print checks, and Accounts Receivable does not print either invoices or statement.

Security is unusually weak, even though dPROGRAMMER uses a password system. The program displays the password you enter on the screen in full view. In addition, anyone on the system can find the passwords by using the DOS TYPE command to list the file's contents.

According to Lautenbach, dPRO-GRAMMER was designed to serve only the basic accounting needs of small companies with dBASE systems. In our test, proved to be more than just disappointing: it was downright deficient. If you're looking for a capable accounting program, one you can use with minimal frustration, look clewhere.—Wichhael L. Brown

SBT Database Accounting Library

SBT Database Accounting I Brery, from SBT Corp., is a solid, basic integrated accounting system—one that you can use for



When you buy a terminal or monitor for your American PC, you want a low price, but not something foreign. You want American quality. American specs. An American look and feel.

Which really means you want the kind Uncle Samsung makes.

Because Samsung has been making them that way in Korea since 1979. For some of America's largest PC manufacturers. So they're already as familiar as the 4th of July.

But now you can buy Samsung terminals and monitors with Samsung's name on them. And save yourself plenty of Yankee dollars. Our 12" and 14" terminals emulate all of America's most popular models. Our monitors do too, and come in a range of cabinet styles.

And our stateside group, Samsung Electron Devices, has an American design team on staff to answer queries and help OEMs with custom designs. Just call (213) 404-1835.

Meanwhile, our perfected manufacturing techniques keep the costs down. And our automated, robotic, assembly lines turn out everything from CRTs to terminals to computers. All to U.S. standards.

So there's no reason to connect your PC to something foreign in order to save money. You can join up with Uncle Samsung.

CIRCLE 319 ON READER SERVICE CARD

SAMSUNG
Electron Devices

SAVISUNG MAKES IT AMERICAN

73H R. THE JOONG-AND DMLY NEWS RIDG.
7500N-HM-OONG, DHLING-RU.
5500M-HM-OONG, DHLING-RU.
5500M-HM-OONG, DHLING-RU.
5500M-HM-OONG-RU.
520, 755-253 (611-553)
620, 757-253 (611-553)
620, 757-263 (714-553)
784-810, 757-4632
USA HEAD OFFICE
USA HEAD OFFICE
USA HEAD OFFICE
USA HEAD OFFICE
106 AMBGLES
TO

FAX: (212) 526-774 SANTA CLARA TEL (405) 570-864 TELEX 4745070 S TELEX 2298000 SANSE! FAX: 603 S81-4606 LONDON TEL: (01) 601-6051-5

						Cap			
	I woice	Inveice							
*******	*******	*******	****	**		******	******	******	*******
4575	932	11/81/87			5730.84				5778 B
V22000H		18/38/87	11/83	2	14004 88		8 98		1480E-80
CUSZZP	Costom Pa	ist and G	raphic	۰	28530-84	***			28530 04
4/2 28	менсида				7325 86				7325 B
28	45	12/03/17	81/82	2	14780-18	0.00	8.00	0.00	14790 11
FAL 348	Fall Cree	k fikeryl	101		22033.18	* 10	1 10	1.00	22933.10
8383		11/82/97	11/30	2	1429.14				1429.19
MAT 1	MOTEL 11s	283			1429.14				1429 1
4643		11/83/82	11/36	2	19979,86	8.00	6.10	2 80	18076 0
Tress :	ou here to	centions	er "0		o Quit	2			

You get a lot of information on the screen with SBT Database Accounting Library—so much that it makes the screen appear busy.

just one company or for up to 99 companies. SBT Corp., a pioneer in the field of integrated accounting packages, offers this array of programs for \$395 per module. Capable of being used either as a standalone accounting package or as a dBASE add-on, it includes impressive dBASE customizing features.

Whether you use the modules individually or as in integrated system, SFT Detables A counting Library's General Leaving Egy Accounts Receivable, and Accounts Payable programs are versatile and dependable. Even an inexperienced user can master them quickly. The program logic follows dBASE, and you can leave SFT (with the established file structure) and run your own dBASE applications. In addition, two levels of passwords are available for each module, giving our the option of lim-



iting access to certain applications or even modules.

SBT permits you to use nine different account classifications, with each account number represented as a nine-digit alphanumeric code. Thus you can have a fivedigit basis number and a three-digit account number.

SPECIAL REPORTS The field lengthing and user-defined variables made insputing, the initial accounts receivable clients and payable vendors noncriately slow. But the slow speed in later offset by the versatility of special management decision reports that are build into the systems. For example, in the Accounts Receivable module you can select reports for analysis based on odliar volume, territory, salesman, indistry, and even a user-defined miscellaneous code.

The SBT Database Accounting Library built-in-edit system prevents serious file structure problems, out-of-balance accounts, invalid data field values, and daplicate accounts. Frequent warnings help guard against losing or corrupting data. And the flexible system permits you to move from function to function easily.

EXTRA PROTECTION When transactions span two modules, you need to complete processing in one module, and then log on with your password to process in the second module. For example, when you finish the Accounts Receivable transactions for automatic input to the General Ledger, you quit the Accounts Receivable module, log on and select a General Led-



There are better ways to automate your books than using a GBASE accounting package. Although we don't have an Editor's Choice in this category, if you must have a GBASE package, we suggest you consider AccountMate, made by Source-Mate Information Systems. If a sure-Mate Information Systems. If a sure-friendly. It is gots of GBASE. And its \$1,085 price includes the source code.

ger company code for processing, supply a password, and then begin processing the general ledger transaction. The extra edits time and password protection are a tradeoff for increased security and control.

SBT's adequate documentation includes sample screen images that assist the first-time user and present a step-by-step approach to using the program. Each module includes an excellent built-in sample company, which is a great help for learning the system. The main menu of each module gives synte tutorial company, and at this stage you can add a new company (up to ⁵⁹), select one already established, or quilt. SBT Corp. recommends per a feeling for the flow of the program before extiting up the files for your own upnifications.

One of the best features of the SBT Deadsea Accounting Library is the ability to customize the packages for your individual needs. The standadone compiled version is excellent, but the ABASE version gives you unlimited use of ABASE applications from the existing file. And you can add other SST modules to expand your system, including Asset Accounting, Professional Time and Billing. Project Accounting, Property Management, Purchasing, Pay-roll, and Ordering.

SBT's menu-driven accounting programs are slow but dependable, user friendly, and highly functional. SBT's built-in edit system, dBASE-compatible option, and the ability to customize the programs add to its flexibility and power.—William Winberg

Funk's new 1-2-3 Performance Software



runs faster, runs easier, runs with 1-2-3.

So why run around with anyone else?

It's no contest. Funk's 1-2-3* Performance Software helps improve your 1-2-3 productivity better than any other software you could possibly track down.

That's because each one is in perfect step with 1-2-3. With menus and commands like 1-2-3 itself. And with powerful functions and features that take up right where 1-2-3 leaves off.

So don't wait. Dash out to your favorite computer store and ask for them by name. Or order directly from Funk Software.

InWord. Real word processing that runs inside 1-2-3. No sweat.

Now this is what you call teamwork. 1-2-3 handles your numbers while InWord "tackles your text. InWord is the full-fledged, full-function word processor

that runs right inside 1-23. So you can jump back and forth between your 1-2-3 worksheet and your InWord document instantly. Move some text into your spreadsheet. Move some spreadsheet into your text.

And create "live links" directly to data in your spreadsheet. So when you make a change on your spreadsheet, it automatically shows up in your document.

Plus, InWord zips right through mailmerge operations, straight from your 1-2-3 database. It's as easy as highlighting a range. InWord keeps you moving at top speed, too. With features like automatic

word wrap and paragraph reform, horizontal scrolling, search and replace, cut and paste, cursor

movement by word, sentence or paragraph—

odathest integration,
plus powerful formatting
and typestyle controls.

Best of all, inWord has formatting and printing
features to rival the most expensive stand-alone

In Word

gives you instant spreadsheet integral

word processors.
You can format your documents with headers, footers, page
numbers, tab stoos, indents, hanging indents, as well as left.

right, center and full justification.
Plus, you can print with blold, underlined and italic
text, and mix typelonts and pitch to your heart's
content. And since InWord takes full advantage of
all your printer's features, you'll be able to create professional printouts of both your text and spreadsheets,
whether you have a 9-pin dol-matrix, or a high performance

printer like the HP LaserJet.
So it's up to you. You can limp along with a word processor that wouldn't know a spreadsheet if it tripped over it—or with one that's weak on features and wobbly on performance.

Or go for the power, simplicity and full 1-2-3 integration of InWord. It's just \$99.95. (Requires 1-2-3 release 2) CIRCLE 811 ON READER SERVICE CARD.







Burdened with the details of your spreadsheets? Let Noteworthy jog your memory.

for four years running.

Stop running in circles trying to remember all the assumptions and relationships behind your 1-2-3 spreadsheet entries. Get Noteworthy." It never forgets. Noteworthy is the professional annotation and

documentation software made especially for 1-2-3. It's fast, convenient, and gives you a greater degree of integration with 1-2-3 than has ever been possible before. Want to remember why you put what you put in a

cell? Just hit the hot-key and up pops a blank note. Then type away using Noteworthy's powerful built-in editor. Create single notes up to 8,000 characters long.

Make as many notes as you need, in a window of any size you choose, positioned on the screen where you want. Copy text from your note to your spreadsheet. From your spreadsheet to your note. Or from one note to another.

Noteworthy even reminds you where you put your notes. Each time the cursor lands on an annotated cell, the note indicator lights up at the bottom of the screen.

At just \$79.95, Noteworthy is a giant step forward in spreadsheet management. (Requires 1-2-3 release 2 OF Symphony) CIRCLE 315 ON READER SERVICE CARD

Sideways. Making the world's favorite 1-2-3 printouts

In the long run, there's no better way to get all the columns of your spreadsheet to print on one continuous page than with Sideways." A fact that's helped make Sideways the most widely used printing utility of

any kind in the history of personal computing. Sideways turns text on its side as it prints. So no matter how many columns you put in your spreadsheet, you'll get a printout that goes the distance. Just highlight a range on your worksheet and go.

Plus, you'll be putting your best foot forward with printouts that really look great. Choose from nine different typefaces from "minuscule" to "mammoth". Mix bold, underlined and expanded type, all on the same page. Print through or skip over CIRCLE 318 ON READER SERVICE CARD

perforations. Add borders, change page size, adjust margins any way you like.

It's a fact. In the wide world of I-2-3 spreadsheet printing. Sideways is number one. For just \$69.95 a copy, why not get Sideways on your side?

(Works with all versions of 1-2-3 and

	as other software) WAR
100	
I want to	
	the best!
Please rush me t	
copie	s of fnWord at \$99.95 each. s of Noteworthy at \$79.95 each. s of Sideways at \$69.95 each.
☐ My check is e	nclosed. Charge my Visa MasterCard
	Exp date
Name	Title
Company	
Address	
City	State Zip
To ord	er call 1-800-822-3865, Ext. 115
10 010	0. 0.0. 0.0 0.0 0000 0000

Funk Software, 222 Third Street, Cambridge, MA 02142 © 1987 Funk Software. InWord and Noteworthy are trademarks of F Sideways is a registered trademark of Funk Software.



Verbatim 6.6 MB subsystems: high capacity with the convenience and security of removable floppies.

You'll appreciate the advantages of Verbatim 6.6 MB subsystems from Kodak.

You get 5.57 MB of formatted capacity and all the benefits of removable floppies. Store unlimited amounts of data. Easily transport files. Secure important information. And back up your hard disk quickly and reliably.

No need to throw away existing disks. This subsystem can read disks with 48, 96, and 192 pit. Available to fit inside or alongside your IBM PSZ model 30 or IBM PC/XTIAT and compatibles. Everything you need for last, easy installation comes with the package. And you're protected by a one-year warranty.

Ask your computer dealer about this new Verbatim subsystem and media. Or call 1-800-44KODAK, ext. 990.

Free Back-It software for hard-disk backup with purchase, while supplies last.

6.6 MB IF ADDEN ORAGE

CIRCLE 166 ON READER SERVICE CARD

The new vision of Kodak



High-Priced Bookkeepers

igh-end accounting packages generally cost from \$500 to \$2,900 a module. They represent quite an investment—even if you install only the basics: General Ledger, Accounts Payable, and Accounts Receivable. What returns can you expect from these packages?

They tend to be feature-rich. They typically possess larger databases and transaction capacities, multiuser configurations, and features that let you customize without

changing source code.

These packages generally excel in their ability to integrate the features of the modutes. Often, too, they will be vertical packages satied to the particular needs of specific industries. Although in general waworlded reviewing vertical packages, we did review those with strong core modulestat can be used for general accounting. For example, in addition to its core modtates, Excellular Jair promotes a specially Myte Myke is known for the features it offers in manufactures.

Finally, if you invest in a high-priced package, you should be able to expect strong support from the vendor: an 800 telephone number, insightful newsletters, and support for independent user groups.

—Timothy J. Lee

ABS Accounting

ABS Accounting Modules, made by American Business Systems and sold for \$300 per module, runs in RM/COBOL. They are well suited for medium-sized to large companies in which many people share

data entry and other accounting duties. The programs can handle up to 99 companies, each with up to 99 departments.

The programs work on UNIX systems as well as on PCs, and the DOS version has features and a user interface consistent with the other versions. A growing company can upgrade to a minicomputer system and essentially keep the same ABS data files and use the same menus and screens.

The resemblance to a minicomputer system brings with some good news and some bad news. The good news is that the ABS programs have excellent passwords-curity, transaction controls, audit trails of transactions, and matter file updates. The bad news is that the programs lack some of the features and speed of newer PC assumpte, so not available, in addition, you must confirm all menu selections with the Entire key, you cannot use curone keys to move around the screen, and you must al-

ways enter the date.

Furthermore, vendor and customer muster files do not include the general ledger account number normally used for posting. ABS daes not display journal ensuring the properties of the properties





American Business Systems Inc. 3 Littleton Rd. Westford, MA 01886 (617) 692-2600 List Price: General Led-

ger, Accounts Payable, Accounts Receivable, \$300 each. Also available: Multiuser version.

Remainer 128K RAM: hard disk: DOS 3

Requires: 128K RAM; hard disk; DOS 3.1. In Short: Package has excellent nodi and password controls and multicorapany capability, allows growth from single-PC version to network with the same user menus and processing procedures. Not copy proceeded. DRGS #200.08 APRIS #578/C DAPI.

NEAR-COMPLETE LEDGER General ledger account numbers use five digits for the account and two digits for the department. You can keep transaction details until the end of the year or purge them periodically, and you can make entires to prior and future periods. Another nice feature allows you to post trial entires and print reports using them. Also, you can change transactions before final posting.

A system this complete should also support recurring journal entries. Although it supports automatic entries for calculating the cost of sales each month based on a percentage of sales and for federal and state taxes, no other recurring entries are possible.



ABS Accounting
Modules' Accounts
Payable module can
access the system to
record and pay
invoices. The module
keeps cumulative
data, and the program
flagis invoices that
require special
handling.

ACCOUNTING

Financial reporting in the General Ledger is unusually flexible, though. You can define the content and the vertical layout of 99 different reports, which ABS can promats. A separate bridge Report Writer module (also \$300) lets you create custom reports and screen displays and transfer report data directly to popular applications programs.

accounts propletus applies uses a voucher number for each invoice. When installing to the form of the propletus and the propletus applies to the propletus applies and the propletus applies and the propletus applies and the propletus applies and propletus applies and propletus applies and propletus applies and propletus applies applies and propletus applies and propletus invoice number for the same vendor. The program can process accounts on either a cash or an account has in

Accounts Receivable cannot create invoices; you must use the order and inventory module for invoicing. Accounts Receivable can have both open-item and

inancial reporting in

ABS Accounting Modules'
General Ledger is
unusually flexible.

balance-forward accounts. When you enter a payment, you can apply it to the oldest items or to specific invoices partially or in full (open invoices are displayed for selection), or you can leave it unapplied on the

account.

All the ABS manuals are comprehensive, but trying to find the information you meed can be frustrating, since they lack indexes, the tables of contents do not include page numbers, and headings do not stand out well from the text. Fortunately, the vendor is revising the manuals. A helpful management guide, with worksheets for oreanizing data, comes with the system.

ABS is a well-conceived package with the look and feel of a minicomputer system, and with some of its advantages and disadvantages. It offers a tightly controlled accounting system with flexible features, but it should give you more speed, an improved interface, and some new enhancements for its relatively high price tag. —Harold Berry

The Accounting Partner Plus

A small business that's just beginning to use computers can pick up a bundle in The Accounting Partner Plus.—without putting Partner Plus., from Star Monogram, gives you a combination of basic accounting programs, the CalcPartner Spreadthers, the Payocard Deskips pop up utility, and a set of utilities that will restore corrupted file.

First-time installers of accounting systems get extensive guidance for preparing the data required to set up The Accounting Partner Plus. The installation guide estimates the time for gathering and entering master file data, provides worksheet forms, and gives extensive coverage to a schedule of daily ocerations.

You can move through the menu-driven programs relatively quickly, but you cannot type ahead by using a keyboard buffer nor use keyboard cursor keys to move around. And unfortunately, you'll find yourself having to enter the same information repeatedly.

The General Ledger is more flexible than you'd expect for this price range. It uses a four-digit account number and a



Star Monogram
367 Van Ness Way
Torrance, CA 90501
(213 533-190
List Price: \$795 (includes General Ledger
Accounts Receivable, Accounts Payable,
Payroll, spraadsbeet, and desktop utility).
Also available: five other modules.
Recurines: \$505 K RAM: two disk drives:

DOS 1.1 or later.

In Short: These base programs for a small business that; is just becoming computerized do a sound job of accounting but are short on features for error handling and streamlining data entry. Not copy protected.

CPCLE **996.WHEDERSHINGS.CHPD**

two-digit department number. You can customize stander financial reports by account headings, subtotal control, and combination of accounts. You can print separate department reports and enter budgets for 12 months to get month- and year-doate comparative income statements. But since The Accounting Partner Plus keeps all accounts on ablance-forward basis for the current year only, you can't get prior-period reports.

Unfortunately, you can delete active accounts if there are no current-month transactions. When you discover the error, you can reenter the accounts. Even though it gives a warning message, The Accountine Partner Plus will accept and post un-



The Accounting Partner Plus's Accounts Receivable module creates customer invoices. It obtains the product description, price level, and account distribution from this item master file when you enter the item number.

"Our company has seen a payback of the RealWorld" Accounting System in one year!"



"RealWorld Accounting System with SynchronicsTM Point of Sale has really benefitted our company tremendously. The system has helped us maximize efficiency and effectiveness. Now we always have up-to-date information on inventory trends and our sales and cost situations."

"The software is excellent in terms of ease of use and flexibility. The User Manuals are clear, concise and very helpful."

"Thanks to RealWorld Accounting System and Synchronics Point of Sale, we have faster access to accounting information allowing more time to manage our business."

J. Jones, Assistant Manager French Country Imports Memphis, TN



sizing is adequate, processing is fast; the tof ware is user-friendly and easy to install. It has quality documentation, labor saving features for inputing data and processing flexibility. As a manage, we also need to carefully look at internal control features to maintain the integrity of the accounting system in terms of data accuracy, audit traits and security."

"...you need to look at the cost benefit analysis which is foremost in our minds today."

"Our company has seen a payback of the system in one year."

William Brouwer, Clinic Administrator Albert Lea Clinic, P.A. Albert Lea, Minnesota

RealWorld's experience in developing quality accounting software dates continuously from 1974. We offer easy to use, flexible software that addresses a wide range of small and medium-sized businesses from architects to yacht clubs.

RealWorld Accounting System is a line of eleven integrated accounting software packages. If you're a first time user, you can start with our 4-in-1™ Basic Accounting package and expand as your needs grow.

Start saving time and increasing productivity with RealWorld accounting software. Call Dealer Services at (603) 225-9565 for the names of Authorized RealWorld Dealers in your area.



RealWorld Corporation

Accounts Receivable-Accounts Payable-General Ledger-Payroll Inventory Control-Order Entry Billing-Sales Analysis Purchase Order-Job Cost-Check Reconcillation Report Writer & Data Bridge^{tot} 4-in-1 Basic Accounting

Zip: Phone:()		
	Address:	
Zip: Phone:()	City:	State:
Town of Designation	Zip:	Phone:()
	Type of Busin	ness:
□ Please send names of dealers in my area.	☐ Please sen	d information on Real World software.
☐ Please send information on RealWorld software	Mail to: Real	World Corporation, 282 Loudon Road

P.O. Box 2051, Concord, N.H. 03302-2051

mark of RealWorld Corporation. Report Writer & Data Bridge is a

MISSING LINKS

An insider's view of what you need (but rarely get) from accounting software.

In the last 3 years The Price Waterhouse Report has reviewed well over a hundred different accounting products for the PC. Some were good. Some were bad. And some were, well . . . yes,

ugly. There is a lot of solid accounting software out there, the best of which has been reviewed for you in this issue. Debugged to the properties of the counting packages, as a direct result of their increasing sophistication and the heightened power of today's hardware, are beginning to make dramatic beadway in some very large compotions. But, overall, accounting lags behind the rest of the software industry.

Hardware manufacturers have put power on our desktops that could have been found only on mainframes a few years ago. Database software has become more powerful and truly relational. Companies like Borland International continue to spawn exciting new user and programmer productivity tools such as Turbo Lightning and Turbo Basic. New word processing tools such as WordPerfect and Microsoft Word, have become so feature-packed as to deny their text editor heritage. (Remember when word wrap seemed so spectacular?) Todav we have built-in spelling checkers, windowing, and search-and-replace functions.

The developers of accounting software have not stood still. There is little question that today, for about \$10,000, you can have the kind of multiuser accounting system that cost well over \$50,000 just 5 years ago. But, with some exceptions, accounting software has not been as well adapted to the PC as word processing or spreadsheet programs.

Other than simply tweaking the interface to make the system more friendly, developers of PC-based accounting software generally have not stretched themselves to develop truly innovative approaches.

What's missing from most of the PCbased accounting software you'll find to-

■ Partial transactions Most accounting software requires you to have all the information on transactions available to you when you enter the data. In real life, unfortunately, that is not always possible. Why not allow users to enter whatever elements of a transaction are known and complete the transaction as

new data becomes available?

Say, for example, that you want to enter cash disbursement transactions but on't know the financial account codes to which the amounts should be distributed; it would be helpful if you could enter most of the transaction information and ther have your excountant or bookkeeper and the contraction of the transaction information and make the property of the processing. There is no reason why software should not include a special function that allows this kind of the chibility for all types of transactions.

■ Text annotation One of the toughest things for users to give up when they automate an accounting system (or any manual system for that matter) is their ability to write notes in the margins of their ledgers and journals. Pick up any set of inventory records maintained by hand

and you see notes like "Stock returned by shipping" or "Reserve 20 gallons for shade blending."

At least two products marketed today—SmartNotes (Personics Corp., Concord, Mass.) and Tornado Notes (Micro Logic Corp., Hackensack, N.J.)—let you append notes to the individual cells of a spreadsheet. Developers of PC-based accounting software should follow that lead.

B Cash management Small-bushness owners and operators care substitute things: customers, cash, and inventory. Most software tendors offer a receivables package to track customers the receivable package to track customers. Interesting management modules are also tured payables and receivables packages they are commented to the receivable package they with elements of your cash flow, few wendors seem to have pulled the components together in a comprehensive, easy-to-use treasury management importance of each to all of us.

Users would welcome a cash planning feature that extracts information from both payables and receivables and exports it to a spreadsheet where that information can be combined with other information that affects cash flow. This would help the manager coordinate disbursements and cash receipts.

bursements and eash receipts.

Transaction templates Most modem accounts payable systems contain a helpful feature that allows you to make recurring vendor payments. This is attractive. But few software developers have extended this flexibility to other

balanced entries, although you cannot close the month until the error is corrected. Recurring journal entries are not supported by the program.

You can enter cash receipts, cash disbursements, and purchases directly, and print checks in the General Ledger. You may want to record most of these transactions in other modules at the same time to

access master file data and minimize the need to enter information repeatedly through the keyboard.

Accounts Receivable offers stronger features than Accounts Payable offers. Both modules use up to ten alphanumeric characters for customer and vendor codes. Both modules accept invalid account numbers, but when the program transfers them

to the General Ledger in month-end closing, The Accounting Partner Plus alerts you to the problem with an incomplete transfer report.

You can create and print customer invoices in Accounts Receivable. An item file keeps master data with five price levels, one of which can be coded into each customer master file. When you enter a modules. Repetitive transactions are common to most, if not all, of the functions in a modern accounting system. It would be helpful if accounting software let the user set up a template (something like the style shosts found in Microsoft Word) for any transaction posted to any of the accounting modules. Each of the templates could be called up, modified, and processed for applications such as recurring orders, similar transactions for sister companies, and standard journal

memors.

"Complementary systems Many small banienesse cannot afford the land and a small banienesse cannot afford the land small banieness cannot afford the land code-tops and minima in effective financial reporting system. Pc-Based accounting of the property of the production in-bouse. But that places new demands on the entrepreneur and his staff, Small-banienes people may be experts at the production, service delivery, or marketing aspects of the banieness, but very often bey law let like banieness, but very often beyond the law let like banieness. And we will be a support to the property of the law let like the law like the law let like the law let like the law let like the law like the law let like the law let like the law let like the law li

The software could improve their ability to handle that new challenge by making available an easy record-keeping system that maintains basic business records, as well as by supplying a complementary bookkeeping and financial-roporting system to formalize them. With this approach, basic operating reports could be developed each day. Anyone in the company could record the transactions, give them to an outside or parttions, give them to an outside or parttime accountant, and have that trained professional transform the raw business transactions into a refined set of financial and management reports. It is a "have-your-cake-and-eat-it-too" approach, and it very well could save money for a small business and, at the same time, make for better reporting.

What you really need is an automated checkbook supplemented with the ability to record financial account distribution. Vendors who combine record keeping and a fully integrated accounting system are on the right track for addressing the

needs of many businesses. ■ Batch file processing A common problem in business accounting is closing out the month-end and ensuring a complete set of management and exception reports. Some people do this with desktop utility packages that allow you to keep a calendar and to record keyboard macros. But that kind of system has its limits. Procedure checklists and accounting calendars, which ensure that all steps are completed in the right order every month, improve accuracy and promote completeness. Software could help if it let users record the executed commands, edit those files into general procedures, and run them again and again.

USING WHAT'S NEW New hardware and software packages give vendors an ever-increasing opportunity to make our lives easier. Scanners and CD ROMs have introduced a way to attach images of source documents to vouchers or invoices as graphic images or as text input.

Since most people now keep paper copies to back up their electronic files, using electronic image storage would make the paperless office a reality. Hook forward to the day when a vendor will make this ability an easy-to-use software feature.

As increased disk space and basic capet system programming become more readily available, vendors should be able to figure out how to give users a system log of the way they actually use the system. And, by looking at the pattern and sus, supply interactive help that goes way beyond today's context-sensitive help screens. One day, it shouldn't be too much to ask for software that looks at much to ask for software that looks a much to ask for software that looks a ment to a start of the software that looks a ment to a start of the software that looks a ment to a start of the software that looks a ment to a start of the software that looks a ment to a start of the software that looks a

tain system features be used to assist you. Graphic possibilities are expanding. Good graphics in data entry screen design and menus decrease data entry training and improve users' productivity. For instance, software could show how a check annears in your checkbook and then give you the ability to edit the fields. There is plenty of opportunity in the area of accounting for a software developer to improve business productivity. minimize the time employees spend using an accounting system, and enhance management information for sound decision making. Innovations and enhancements that make our lives easier will be rewarded in the marketplace. We're impatient for them.

-G. William Dauphinais

customer order, the item code brings up the description and account codes, and it extends the invoice amount. You must calculate and enter sales tax and other charges. If you accept the invoice, the system posts it, after which you cannot make any changes. If you discover an error later, you must enter a credit memo to offset the invoice and then renefter the invoice.

WEAK POINTS You can prepare and print purchase orders in Accounts Payable from vendor master file information, although the module does not track their status. Since the module maintains vendor account balances on a balance-forward basis only, it is the weakest module of the three basic accounting modules.

d printing a vendor status report, you must e enter all information manually, except for vendor name and address. Again, if you make an error, you must reenter the invoice and write a new check.

The Accounting Partner Plus will print an aging of payables, but the total is accurate only after closing the month. Invoices are added to the total only in the month-end closing. To assess the true status of an account, you must print a separate report for each vendor. The package is inconveniently unable to display any reports on-screen.

The Accounting Pariner Plus offers small businesses bundle of programs and many good functions for the price. But is developers should take a che from some of the market's more-sophisticated competitors; like them, The Accounting Pariner Plus Should offer better crore-handling features, display reports on-screen, and climinate the need for the repeated entry of account numbers and reference information—Harvald Berth.

ADS Business Software

ADS Business Software is a series of \$395 accounting modules from ADS Software. It is aimed at the first-time user but offers enough capacity to handle the simple accounting needs of small to medium-sized husinesses.

ADS Software has been developing and refining its accounting software since 1980 and has sold approximately 12,000 mod-us to date. This current version includes a set of general-purpose programs—General Ludger, Accounts Receivable, and Accounts Payable—that can either stand alone or support any of several specially packages. The specially packages include Payolial and Clear Witter-up modules for Payolial and Clear Witter-up modules for private clubs, retail for the standard of the private clubs, retail for the several payor of the private clubs, retail for the several payor of the private clubs, retail for the private clubs. The private p

While the system requires only 128K bytes of internal memory and can be run on a dual floppy disk system, ADS recommends that you use a hard disk. Installing the packages on the hard disk is a simple process.

FAST AND EASY Setting up the chart of accounts in the General Ledger is easy if you use the standard chart ADS supplies, even if you need to modify it slightly. If you want to create your own chart of accounts, you can erase the standard file and then enter your own accounts from scratch.

The simple account structure uses a ten-

The information in ADS Business Software's master files is easy to access and change, which you do by using a menu at the bottom of the screen that is common to all its modules.

digit number (no letters allowed), with no subaccounts or prefixes assumed (although you may embed them within the ten digits). Maintaining the chart of accounts is fast and easy.

ADS Business Software produces: that you can create and modify ADS has infitoduced standard balance sheet and clouded standard balance sheet and clouded standard balance sheet and clouded standard balance sheet and statements you may need, such as statements you may need, such of the departmental operating statements with comparisons to balaged or historical flagurations to balance sheet, but you can create one.

The budgeting capability is very simple, with one annual budgeted amount per account distributed to 13 monthly periods using percentages.

General Ledger handles more than one organization easily, and it can even consolidate the general ledgers. Again, however, you must create the report yourself.

Accounts Receivable has separate programs for the balance forward and open item methods. You must choose one or the other. (Other accounting packages make this an option within the Accounts Receivable module, enabling you to switch methods or to use different methods for different customers.

Customer records contain a minimum

of information. The program keeps only one address, for example, rather than separate "ship-to" and "bill-to" addresses. Accounts Receviable will produce mailing labels, but nonaccounting information kept in the master file is limited, and the

program does not produce dunning letters.
The method that ADS Business Software uses to move summary data from Accounts Receivable is flexible but somewhat complex. To avoid making
unbalanced entries to the General Ledger,
you must use special care to set up this procedure properly.

Accounts Payable can track vendor history (again with a limited amount of nonaccounting information), write checks, and interface directly with the General Ledger. It enters invoices and prints a "disbursement worksheet" to help you decide which vendors and invoices to pay. The system prints checks as the disburse



ADS Business Software ADS Software Inc.
ADS BUSINESS SOFTWARE:

(800) 672-4422
(703) 344-6818
List Price: General Ledger, Accounts Receiv.

Jast Price: Central Ledger, Accounts Receivable, Accounts Payable, \$395 each, with discounts for more than one puckage, Also available: specially packages ranging from \$595 to \$995.

Requires: 18K RAM; two disk drives (hard disk recommended); condensed type or 132column printer; DOS 2.1 or later. In Short: A good midrange accounting puckage that is sample, yet powerful enough for mediums sized businesse; the company

for medium-sized businesses; the company offers several specialty packages. Not copy protected. OHOLL 678 ON READER SERVICE CAND



Boeing Calc. The next step.

Boeing* Calc is the next logical step in spreadsheet evolution. It's a unique program that lets you build related spreadsheets as separate pages within a single file.

The result quick, accurate consolidations between pages automatically even if the pages are formatted differently. Business Software magazine says that once you try this faster, more efficient spreadsheet you'll never go back to your old one. And you won't exceed memory limits or need expensive expansion boards for

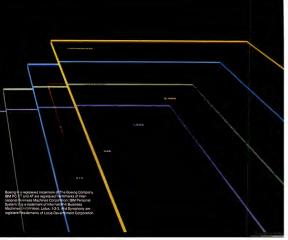
your IBM PC XT, AT, Personal System/2TM or compatible. Boeing Calc memory management techniques let you use its 16,000 rows, columns and pages to create files as large as 32 MB.

The multi-user version supports Local Area Networks. As many as 32 users can access the same spreadsheet at the same time, with separate security levels for each. Right down to the cell. The system administrator has full control and can match task and security requirements to each user. You can automatically import 1-2-3* and Symphony* files directly — formulas, macros and all. Boeing (alc's command structure works like Lotus* and permits you to move quickly to its more efficient command option.

For a demo diskette and the name of

the nearest dealer, call 1-800-368-4555. Or write Boeing Computer Services, P.O. Box 24346, M/S 7W-05, Seattle, WA 98124-0346.

CIRCLE 229 ON READER SERVICE CARD



MEDIA CYBERNETICS — INNOVATORS IN IMAGING AND GRAPHICS FOR THE PC

Since the introduction of the IBM PC class microcomputer, Media Cybernetics has been producing cost effective, high performance graphics and imaging software tools and solutions, These products have been consistently selected as organizational standards by government and military procurement officers and by corporate and educational buyers. The backbone of

all Media Cybernetics' graphics and imaging software is the





Media Cybernetics has also written its own popular HALO-based applications. Dr. HALO II is the most favorably reviewed graphics editing product available. It is icon-based and easy to learn and use. A freehand drawing package, it can be used to capture, edit and add text to images created in other programs. Nimbus is a menu-driven business graphics package which



Image-Pro

gives the user 12 easily modified graph styles and word charts. Nimbus users can make hard copy with plotters and printers or they can produce 4Kx4K resolution slides. HALO DPE is the first graphics-based desktop publishing editor. It is ideal for preparing newsletters.



graphics editing component of desktop publishing systems to give users superior drawing, scanning, scaling and editing functions. Image-Pro is an image processing program for the IBM AT which enables users to capture, edit and enhance images through advanced filtering techniques, contrast enhancement, histogram equalization, pseudocoloring, etc. Image-Pro has brought minicomputer imaging power to the micro environment. Adopted by most major vendors of image processing hardware, Image-Pro is used in varied

applications from medical imaging, satellite imaging, and photo interpretation, to graphic arts, security, and manufacturing. Media Cybernetics' technical expertise is available to help you with published or custom software, device drivers, training, OEM products, and systems design and implementation.

flyers and documents of ten pages or less. It is used as a

When you need innovation, experience and excellence in graphics and imaging... contact the leaders:

media cybernetics, inc. 8484 Georgia Avenue, Suite 200, Silver Spring, MD 20910 800-426-HALO or 301-495-3305 telex 322014



HALO, Dr. HALO II, Nimbus, HALO DPE and Image Pro are all registered trademarks of Media Cybernerics, Inc. IBM PC and IBM AT, CADKEY, Drafix II, and on are registered trademarks of International Business Machines Corp., MicroCostnal Systems, Inc., Formight Resources Corp., and West End File, respectively. ments are entered under normal processing, but it also accommodates manual checks.

Accounts Payable distributes amounts to General Ledger accounts by entering one or more account numbers and distribution amounts. This method is simpler, though more work for the user, than that used by Accounts Receivable.

IDEAL FOR SMALL BUSINESS The brief, simple ADS documentation occasionally sacrifices comprehensiveness, but it includes a simple tutorial to get you off to a good start. Support for the package is excellent: unlimited telephone support is available for approximately \$100 per package per year.

ADS Business Software is ideal for the small or medium-sized business that needs the capacity and the flexibility of a fullblown modular system, yet whose accounting needs and level of sophistication do not warrant a more expensive high-end package. Though not covered in this review, ADS software's specialty packages are noother strictive features.

- John Cashdollar

BPI Enterprise Series

The BPI Enterprise Series accounting software is highly regarded in the high-priced accounting software market, as it rightfully should be.

The series includes General Ledger, Accounts Physibe, and Accounts Receivable modules at 5795 each, and features other modules (see PC Magazine "An Enterprising Accounting Series from BPI," Volume 5 Number 11). Software installation isn't tough. Once the system disk is installed, you accomplish the rest through a menu. The program establishes all the necessary data directories and copies the files from the supplied disks.

In configuring the program for your company, you should assign user IDs. With these IDs, the system remembers certain things about each user, like periored screen colors, or supplies a unique and useful pop-up calendar that can record appointments, future accounting processes, and activities accomplished during the entry session.



BPI Enterprise Series makes good use of wildcard selection. Items with an "*" next to a data field allow window lookup of related lists.

BPI Enterprise has a queuing function that allows processes and reports to be stacked for execution at a later time. You must be careful, however, not to mix the printing of statements, checks, and invoices, since each requires a different type of paper, and you must tell the program when you change it.

PASSWORD PROTECTION BPI Exterprize allows password protection, which is not to be confused with user IDs. Passwords will lock out access by application, not mess level. Systems that offerscurity at the mean level are more flexible in terms of what operators are able to do or see. For instance, some programs will allow users without a password to input data. With BPI Enterprize, it's an all-or-nothing proposition.

An especially nice feature of BPI Enterprise is its ability to execute DOS commands directly from the program and, if memory permits, to temporarily leave the program and load another program. Backup is not dependent on this Access DOS selection: it is available elsewhere as a menu selection.

General Lodger features flexible financial reports, budgets, and computative reports as well as automatic journal entries. Setting up General Lodger is straightforward, although BP Enterprise (except only two accounting periods open at any one time, which can make required adjustments to prior periods somewhat difficult to accomplish.

UNUSUAL JOURNAL Journal transactions are limited to 12-line liters per ettly proving the entry. Once an entry is accepted, it immediately posts to General Lefe. That automatic posting can mean many corrections later if you do not carried prepare journal input and review your work on screen before approving it. The work of the property is not the proving the prov



20 or so characters per transaction line.
Accounts Payable allows complete

Accounts Payable allows complete woucher processing, vendor account detail, automatic account aging, bank reconciliations, and good control over the payment process. It creates well-organized management reports that can be printed or viewed on screen.

It also tracks a great deal of useful information by vendor, although it cannot accumulate payments for 1099 reporting. If 1099 reporting is important in your operation, it might be possible to be creative when establishing vendor ID numbers, then select relative information by using

BPI Enterprise's wildcard feature.

The program also issues a warning when duplicate vouchers are entered, allows default general ledger accounts assigned to a vendor master record, and offers payment selection by voucher,

vendor, due date, or available discount. Accounts Receivable carries balanceforward or open-item accounts on a revolving, fixed-payment, or normal basis. It allows for cash discounts, automatic finance charges, and variable billing cycles. Like Accounts Payable, this module also creates good reports that can be sent to the screen or printer.

BPI Enterprise's Accounts Receivable module can produce invoices as well as statements—something many programs do through an additional Order Entry module. With this feature you can indicate a "ship to" address that differs from the billing address, or you can alter either address as necessary.

A credit limit for customers is established in a master customer record, and the program issues a warning at invoice entry if the credit limit is exceeded.

BPI Enterprise makes good use of an information selector function, which is useful as an on-line method of accessing lists such as account numbers, names, customers, and more. BPI Enterprise makes it easy to create financial report definitions and has an excellent on-line help text. However, the Accumentation is not particularly well organized, and the tutorial ought to be separated from it.

BPI Enterprise is a speedy, capable package with a good user interface. It would fit many business applications. [BPI Enterprise Series was developed by BPI Systems. Computer Associates has bought the company, but continues to market the product under the name Enterprise Series.—Ed.]—William H. Stewart

Bristol Integrated Accounting System

Bristol Integrated Accounting System has had a previous life. Written in Bisiness, a Datapoint language product, the package was first a minicomputer accounting system. Bristol Information Systems ported the \$800-per-module package to the PC and enhanced it for the new environment.

and enhanced it for the new environment. Despite the package's new guise, some of its old ways haven't changed. Although full of features and replete

with on-line help, Bristol Integrated Accounting System is not for nontechnical users. Menus are inconsistent from module to module. The data entry screens offer new-style help, but a residue of old-style methods remains, such as having to use 99999 to exit a screen. It's up to you to remember to use many of the expected as-

counting controls

In addition, the package accepts invalid dates and posts invalid accounts automatically to the General Ledger. It also posts batches directly to master files without giving you the opportunity to edit them, and at certain times you must perform a sort before a function will work correctly.

Setting up the General Ledger, which accommodates eight-digit account numbers, is not difficult. You enter transacFACT FILE

Relating System Deficies Information System No. Main St. Fall River, MA (0270 (60)) 541-510 (617) 679-1051

List Prince Connect Lodger, Accounts Re-

ceivable, Accounts Psyable, \$800 each. Also available: 17 other modules; multiuser version.

Requires: 384K RAM; hard disk; condensed type or 132-column printer; DOS 2.1 or later. In Short: An expensive, difficult-to-use package with loss of features and a residue of its old-style minicomposer heritage. Not

CROLE 644 ON READER SERVICE CARD

tions at the bottom of a screen that looks like a columnar journal sheet. As you enter information, the program clears the top of the screen and displays a help message. After you enter data, it displays the batch balance. If you make a mistake, you must post another journal entry to fix it. Batches need not balance, and you can post the same batch more than once.

Bristol prints a ledger each time you post a batch, and you can print the ledger for any period on demand. Ledgers include a simple trial balance along with a predefined income statement and balance sheet based on user-specified accountranges. You can also write custom reports.

Commin



Bristol Integrated Accounting System takes a simple upproach to data entrywith descriptive help, but it relies on oldstyle methods, such as using 99999 to exit a screen. There's One Personal Computer Company That Always Has The Right



Board-level best. Do you recognize these boards? Look under the hood of your IBM® PC, XT or AT." With sales of SixPakPlus." Rampage* and Advantage™ multi-

function boards exceeding 2 million, you can bet most IBM Personal Computers are enhanced by AST. Think of us every

Hundreds of solutions to enhance

your IBM PC.

time you need more memory, more I/O, graphics or modems for your PCs, XTs, ATs, and yes, especially the new IBM Personal System/2™ AST enhancements

contribute to a more productive overall office environment.

First in a series of system solutions. Waste no

time trying to match components to create a complete system. You can purchase, plug in and operate AST's integrated workstation solutions in no time.

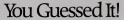
All of our products meet our strict guidelines for industry compatibility, but advanced architecture and innovative technology transform AST computing solutions into something more.

You get more performance

Memory
Multifunction
Data
Communications
Graphics
Laser Printers
LANs
Personal
Computers
Total Solutions

With so many different standards and daily advancements in the personal computer industry, it becomes a superhuman responsibility to stay informed. And yet, you must, in order to select the best products for your company and your own personal computer.

What's the solution? Rely on one company— AST Research. With a solid track record for quality and performance among a full-range of computer solutions for the IBM PC, XT, AT and Personal System!/2, AST has earned a name that assures satisfaction.















the expertise to AST.

Our terminal emulation products lead the industry in providing unique, cost-saving ways

for your PCs to be linked with minicomputers or mainframes. And our simple-toinstall networks with advanced operating system

features appeal



Connectivity for IBM, Apple and DEC computers.

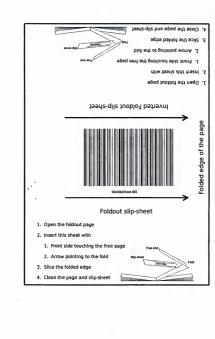
to both first-time and sophisticated users.

Bridging the computer gap with DEC™ and Apple* enhancements. AST crosses

> industry boundaries to bring Apple and Digital Equipment Corporation (DEC) users the same experience and com

mitment to quality we give to the IBM world.

In addition to manufacturing industry-specific enhancements, AST offers products that bridge normally incompatible technologies-like MS-DOS coprocessor boards that allow Macintosh users to run IBM applications software and terminal emulation packages allowing IBM PCs to communicate with DEC computers.



J. Follow instructions on the other side

Іпуещед Васк



Back

1. Follow instructions on the other side





from the AST Premium/286™ ATcompatible personal computer, with its

10 MHz processing the AST-Premium/ 286. speed and true, zero wait-state operation. You get more extensive printer and plotter emulations and faster, high-quality output from the AST TurboLaser.™ And more software and complete system compatibility from the



Premium Publisher.™ Compatible connectivity.

first desktop

publishing solu-

tion for the IBM

world, the AST

Buy communications solutions today that you can continue to expand and use tomorrow. AST's complete line of micro-to-mini, micro-to-mainframe, gateway and local area networking solu-

tions provide total compatibility with industry standards, Plus, a common, user-friendly interface throughout AST's communications products allows you to mix and match AST products in order to create a custom solution. So, if SNA, BISYNC, 5251, 3270, LU6.2PU2.1, Gateways, NetWare," Token Ring Network, IEEE 802.3 and other communications specifications worry you, leave









Showing up in first place, worldwide. It's no accident that AST products continue to win over the hearts and minds of editors and customers alike. AST's track record for quality is hard-earned.

It begins with L150 employees throughout the world singularly committed to product excellence. It continues with state-of-the-art research and development, manufacturing and worldwide corporate facilities encompassing a quarter of a million square feet. And it's carried on by a wide network of dealers, OEM partnerships, distributors, training personnel and service centers always at your service.

Whether your business requires a single board, or complete system, you'll find AST Research is the single solution for powerful computing. Call us today at (714) 756-4700. Or fill out the coupon below and mail it to AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714-4992,

-	_	_	_	_	_	_			_	_			_		
	Ple	ease	se	nd	me	in	fon	mat	ion	on	the	fc	illo	win	ng

- III IRM: ☐ Multifunction ☐ Local Area Networks ☐ PC to Mainframe/ ☐ AST Premium/286
 - Personal Computer Minicomputer ☐ AST Premium Publisher Communications ☐ Graphics ☐ AST TurboLaser
- ☐ Apple enhancement products □ DEC enhancement products

Company

City/State/Zip

To help us better serve you, please list the magazine and issue date in which this ad appeared. ..



PAYNOVENDORS The master wender file use as five-character vender ID and includes name and address, terms, and 1099 information on the vendors. The Accounts Payable module enters transactions directly into the open invoice file and posts general lodger distributions immediately to a General Lodger journal. It verifies the vendor number against the master file; you can add new vendors by entering a special counts, you man to post the module procures, you man to post and termember to use a special routine.

You can print a list of invoices due, a strict balance, and an aged payable and trial balance, and an aged payable and trial balance, and an aged payable decest and prints invoices to pay. You can elect and prints invoices to pay. You can enter selections to be basis of the invoice terms, or you can enter selections on one at a time. You must also remember sort your invoice file for the selection process to work. After the check run, certs to work. After the check run, print a check register and post the checks to the General Leder.

Bristo Jussa six-character customer ID in the Accounts Receivable module. You use the package's invoice entry program de-inert all invoices, credit imenso, and adjustments directly into the open invoice file. The module verifies the customer number and tests the invoice number for objectives. An action code identifies the objectives, and action code is destined to the control of
The package can apply cash receips and credit memos to invoices in full, as a partial payment, or on account. You can recall the oldest invoice automatically, and the screen shows the remaining check amount as you apply payments. You can print a list of cash receipts, sales, or both combined. At month-endy oug et an aging statement, a sales analysis by customer, and a General Loger Sales journed.

and a General Ledger Sales journal.

The documentation is adequate but often overly technical. For each function, it describes internal filenames and processes that most users shouldn't need to know.

Bristol Integrated Accounting Systemhas all the basics and more, including vertical market modules, but it operates like the minicomputer packages of a decade ago—confusing to use, with too many ways to make mistakes. At \$800 a module, the old-style package looks unimpressive competing with sophisticated, new-style products that are easier to use and offer much more value for the cost.

-Mike Falkner

Business Partner Accounting Software

Business Partner Accounting Software was known as Business Libraries until it was purchased this year by Accountants Microsystems Inc. (AMI), a company well known for Datawrite, its accountant's write-up software.

A supervisory module that controls passwords and company IDs must be loaded before the accounting items. You must unlock each package with special codes or you will be limited to 20 records per file. Before creating a new file, you must prare a list of expected file sizes and control items, or you will have to expand the files with a database refresh program later. Someone who knows the system should help you with installation.

Business Partner's ledger, customer, and vendor file codes are flexible, and the documentation includes detailed checklists and descriptions with good screen examples. But a certain amount of fine-tuning could help the package.

It is not as consistent and friendly as it could be. Entry errors are reported with no hint as to the proper answer. Some printing FACT FILE

Business Purtner

Accountants Microsystems Inc. (AM)

3633 196h Place SE

Bellevae. WA 98000

(206) 643-2050
List Price: General Led
ger, Accounts Receivable, Accounts Payable, \$795 each. Also available: five other
modules; network version, \$200 extra.
Requires: 3484 R.AM, hard disk, DOS 2,1

In Short: The Accounting Series gives adequate support to the Manufacturing Series. Not recommended to stand alone. Not copy

Prof. recommended to stand alone. Not copprotected.
CRICLE 602 ON READER SERVICE CARD

and posting functions are called from the entry screen in one module, while the same functions are main menu items in another. Reports belonging in the reportion menus are found in transaction processing menus. Upper- and lowercase letters are not the same when used for customer and vendor IDs, and it is easy to create what looks like dublicate items.

AMI also sells the Manufacturing Series (Inventory Control/Bill of Materials, Order Entry, Purchasing) and the Productivity Series (Information Retrieval, Letter Writer, Business Analyzer, and Information Couriers to and from Datawrite). The old Business Libraries' Manufacturing Series is generally well regarded, and if a



With function keys in each entry screen to add, change, delete, inquire abost, and print information, Business Partner Accounting Software reduces main-menu choices to a minimum.

manufacturing system is what you need, the Accounting Series will give you adequate support. At \$795 per module, however, the Accounting Series by itself is not vour best buy .- Mike Falkner

CertiFLEX

CertiFLEX, the CertiFLEX Systems package that sells for \$695 per module, gets the iob done but is cumbersome to use.

Setting up CertiFLEX's General Ledger is straightforward, but you must start a chart of accounts from scratch. For each account, you enter account number and name, financial statement line, print status, and year-to-date balance. Account numbers may be up to ten characters, and your coding structure determines the extent to which you can use CertiFLEX's sublevel or departmental reporting feature. CertiFLEX can support an elaborate numbering scheme, but you must create each report individually-a time-consuming task

Each account must have a financial statement line. CertiFLEX includes a comprehensive financial statement line listing,

ertiFLEX can support an elaborate numbering scheme, but vou must create each report individually.

on which its standard reports are based. Fortunately, the standard reports are adequate for most companies' needs; you wouldn't want to tackle the overly involved process of modifying CertiFLEX's financial statements and reporting strucfilm

CertiFLEX lets you enter transactions into the General Ledger manually or update them automatically from other Certi-FLEX modules, such as Accounts Payable



CertiFLEX's windor file displays a summary of historical information, as well as detail of open items. Invoices may be rescheduled or divided for partial payment at any time.

and Accounts Receivable. You can set up automatic monthly or annual journal entries and designate whether you want them to reverse in the subsequent period. A closing entry report indicates whether these entries have been posted, but CertiFLEX does not report any deletions or modifications to these entries. Other CertiFLEX General Ledger transaction reports include a General Ledger audit trail, a General Journal, and registers of transactions that have been entered manually, like sales and checks.

CertiFLEX's Accounts Payable module posts transactions to the General Ledger immediately. When you set up each vendor, you choose one of six payment options. Other options allow you to set up a retainage percentage and designate payment to a third party. You can quickly locate vendors by typing in the first few letters of the vendor name, but CertiFLEX lacks a system check for duplicate invoice numbers-a major shortcoming.

Accounts Payable transaction reports include voucher transactions, voucher and check registers, and a recurring expense voucher report. Master file reports include vendor master file listing and recurring expense listing. CertiFLEX also generates Accounts Payable Detail and analysis re-

CertiFLEX's Accounts Receivable system uses the same numbering process for customer accounts as the Accounts Payable system. When you set up each customer account, you designate whether sales are taxable and, if so, the appropriate tax rate, the type of statement, the terms.

and the credit limit. You use sales codes to enter Sales/Accounts Receivable transactions in customer accounts.

A FEW MORE STEPS The Accounts Receivable system requires a few more steps to update transactions to the General Ledger. After you have posted or written invoices, you must print sales reports-first daily, then monthly reports. If you fail to do so, the module will not post transactions to the General Ledger. If you go directly to the option to update the General Ledger, CertiFLEX fails to indicate that certain transactions have not been posted.

Before running statements, you must



Dallas, TX 75234 (800) 237-8435 (214) 484-7676 List Price: General Led ger, Accounts Receivable, Accounts Pay-

able, \$695 each. Also available: five addiquires: 256K RAM; two floppy disks or hard disk: condensed type or 132-column

In Short: A menu-driven accounting system with integrated modules covering a wide range of businesses; many features, but cun

printer, DOS 2.1 or later.

hersome to use. Not copy protected CRCLE 665 ON READER SERVICE CARD



Disk Optimizer puts the zip back into your hard disk.

Your hard disk will run faster when it's not chasing around after files.

Remember the old days when your hard drive was new? Remember that smooth, fast, slick performance? Those quick retrievals, rapid saves, lightning-like database sorts? Well ever since, DOS has been doing its

best to slow your hard drive down. Not by slowing down the motor, but by breaking your files up into pieces. Storing different chunks in different places. Data files, programs, overlays and batches that started out in one seamless piece are now scattered all over

Loading is slower. orting is slower Retrieving, backing-up.

Everything takes longer because your disk has to work harder. Problem is, it's something that happens so

gradually you may not notice the difference. At least, not unril you see the dramark improvement after using Disk Optimizer

File fragmentation-lt's a problem you can see.

Watch your hard drive the next time it reads or writes a file. Each "blip" of the LED means the drive-head is moving to another place on the disk-either to pick up or lay down another chunk of data. And the truth is, head movement takes

time. Far more time than actual reading and writing. What's worse, all this head movement causes extra wear and tear that can shorten the life of your drive.

Disk Optimizer-Tunes up your disk by cleaning up your files.

Disk Optimizer works by finding all the scattered pieces of your files and putting them back together where they belong. Next time your drive reads it, there's just one place to look

And the results are often dramatic. Reading and writing times may be cut by as much as two thirds. Database sorts that used to take hundreds of head moves now proceed quickly and efficiently. And since head movement is now at an absolute minimum, your disk drive will lead a longer, more productive life.

Analyze, scrutinize, optimize.

Before you optimize, you'll probably want to analyze. So Disk Optimizer

The more fragmented your files get, the longer they take to retrieve shows you, in percentages, how much fragmentation has taken place—on the enrire disk, in individual directories, or for groups of ②Disk Optimizer \$5995 files you specify using global

or wildcard names. Plus, there's built-in data security that lets you assign swords to as many files or

file groups as you want. And the File Peeker gives you an inside look at the structure of files. It's a great way for non-programmers to learn more about computers, and a powerful tool for professionals who want to

analyze the contents of their disks. Get your hard disk back in shape - with new improved

Version 2.0 Hard to believe, but new Disk Optimizer Version 2.0 is

Here's what people are saving about Disk Optimizer. "I feel this is essential software for anyone with a hard drive."

-D. Somon, TEXACO, Galleria.

I find Disk Optimizer excellent. Disk access-even at 4.77MHz-is much faster. And loading 100+ Fontasy fonts now takes seconds."

-Eigsbeh Josn Dode, Induse

*Disk Optimizer...(has) found a permanent place on my software shelf."
-Stephen R. Danis, PC MAGAZINE

SoftLogic Solutions, Inc. One Perimeter Road Manchester, NH 03103 800-272-9900 (603-627-9900 in NH)

all today:800-272-9900

CIRCLE 334 ON READER SERVICE CARD

even better than before. Not only will it optimize your disks in far less time than it used to, but it actually speeds up retrievals even more by letting you give priority treat-

ment to your most used files, like programs and batches. When you think about it, it's simple-The longer you own your hard drive, the

more you come to depend on it. But the longer you wait to get Disk Optimizer, the less performance you'll get. Use it just once and discover what thou-

sands of satisfied PC users already know-\$59.95 is a small price to pay to restore the speed and performance you count on-

Buy Disk Optimizer at better computer dealers everywhere, or order today by calling SoftLogic Solutions at 800-272-9900 (603-627-9900 in NH).

recalculate the age of accounts and calculate finance charges. You set up aging and finance charge dates in your company master file, the Percentage to Calculate finance charges, and indicate if the charge will be compounded.

CertiFLEX's user manuals are adequate but lack indexes. Quickly locating the information you need can be difficult.

While Certif-LEX Offers a number of useful features, as well as alternative methods for processing most transactions, its report capabilities are limited, and its an audit trail of master file maintenance as and use further or the comportant system checks. These drawbacks make Certif-LEX cumbersome to use. More important system between the contraction of the composition with those of other, more-ophisticated packages in its hefty price range. —Thomas A. Mevers

CharterHouse

CharterHouse is a fast, flexible, comprehensive accounting system with many advanced features. Its developer, Charter-House Software Corp., was established in 1978 and has software currently installed at more than 3,000 sites. The system, which is easy to set up and use, includes 14 modules ranging in price from \$700 to \$1,700.

The install program creates a separate directory for the *CharterHouse* modules. Using menu selections, you set up the

CharterHouse is a fast, flexible accounting system with many advanced features.

companies to be maintained and the modules each company will use. During company initialization, a program verifies the room needed on the hard disk. Charter-House automatically expands to accom-



CharterHouse's chartof-accounts formatting can be set up with the account type as 0 to facilitate coding. Financial statements can be formatted at the end of all account codes.

modate your company as it grows.

All the modules use function keys to full advantage. The most detailed part of the setup is the chart of accounts. You can use one of the three charts that come with the General Ledger or create your own. Either way, you should print out one that comes with the system and note any changes or additions you want to make. Then modify, add, or delete to create account to the come and work for your other companies. According to the Charterflowser, you can According to Charterflowser, you can

set up the chart of accounts without the financial statement structure. You can format reports separately to get the required consolidation of accounts and formats. A new Data Link/Report Writer is available for more user-defined reporting needs.

CharterHouse's General Ledger, which sells for \$1,000, lets you maintain and post to 26 open accounting periods: 13 in the current year and 13 in the next year. The prior year's (13 months) detail numbers are retained for comparison reporting, so you have 3 years of data for financial reporting.

The system's error detection and veritying features are complete and flexible. Some of CharterHouse's added features based on a percentage of gross profit, and sutomatic state and federal tax account entries based on your estimated tax rate for each. And CharterHouse allows you to do multiple interim closings before the final year-end closing.

THEE ENONE Accounts Receivable Inventory, and Stack Analysis are offered together in one flexible, economical mode use well as separately. Selection of opin iern or balance forward is made on a personant based on the continuous and state, and you can be consomer basis. You can track sales by territory, aslemman, and state, and you can well only one of the continuous and t





PROBLEM: Handling your need for more megabytes, without spending megabucks on a new drive.

THE SOFTLOGIC SOLUTION: Cubit™

Now get up to twice the capacity from all your storage media.

You know what happens. The more you use your computer, the more information you create. And the faster you fill up your disk. The IOMB drive that once seemed enor-

mous is now immed with important files. That 20MB that should have lasted years is crowded in a matter of months.

Of course you could keep buying bigger hard drives. Or you could get Cubit and per the maximum storage space from the drives you already have.

What is Cubit?

In brief, Cubit is an advanced software tool that automatically reduces the number of bytes required to store a file, then converts the file back to its original size when retrieved. Some programmers call this effect "data compression," orhers, "disk expansion." Either way, the result is the same.

Here's how it works. When Cubit compresses a file, it first compares each word to its massive English word dictionary. Words than match are reduced to a predetermined code of just one, two or three bytes each. It then saves the abbreviated version to disk. Decompression works just the opposite.

To accommodate other words and symbols, Cubit uses two more compression techniques. One assigns new, shorter codes to unusual words. Another compresses according to the frequency of character strings in non-text data. So no matter what kind of files you create. Cubit ensures maximum space savings.

Best of all, you'll be using the same fast reliable dara compression techniques used on mainframe computers for decades.

How much disk space will you save? Because the vast majority of data created on PC's is standard ASCII text-letters

numbers and other English language symbols-we've optimized Cubit for word processing and database files. With these, you'll get a minimum of 50% expansion on up to a full 100% or more. At the same time, you can expect a significant 30% to

50% improvement with other kinds of data. Including spreadsheet files, program code, graph and image files, even binary

And Cubit works just as well with floppies and tape cassettes as it

does with hard disk drives Run Cubit where you want. when you want.

Maybe you'll want to use Cubit for all your files, or maybe just some. So Cubit lets you specify exactly which files to work on and which ones to leave alone In RAM resident mode. Cubit works quickly and

invisibly, compressing and decompressing right from within any program you run. Or use Cubit's powerful file management mode. It supports wild-card and global file names, and addresses sub-directories

up to thirty levels deep. Save time and money, as well as disk space.

A compressed file is a smaller file. So with Cubit, back-ups

CIRCLE 336 ON READER SERVICE CARD

take less time, as well as less space. And communicating compressed files means significant savings on phone line charges. Any way you look at it. Cubit will pay

for itself in no time. So why buy a bigger drive

when you can have smaller files?

Cubit is already saving time, trouble and money for thousands of PC users nationwide - by giving them up to twice the storage capacity from all their magnetic media. And all for just \$49.95 - a mere fraction of the cost and bother that

come with a bigger hard drive. Look for Cubit at better computer dealers everywhere. Or order from SoftLogic



800-272-9900

(603-627-9900 in NH)

Call today:800-272-99

by average cost, LIFO, or FIFO with unlimited layers.

A unique feature of the CharterHouse Accounts Payable module is that it can handle both cash and/or accrual accounting. With a one-character selection in the payables setup screen, you can change from cash to accrual, print reports, and switch back again. The voucher entry of-

fers unlimited distribution capabilities.

Charrieffaues has two levels of password protection: one for full access and work protection. The full access and instances are suffered to the full access to one of the limited selections, you must allow access to one of the limited selections, wor must allow access to all. Charreeffuses's audit trails are not as good as they could be. Unfortunately the package diseast. If the protection of the password protection. The password protection of the password protection.

CharterHouse also includes a unique timesaving feature: you can pull up needed information while you are entering data. All in all, CharterHouse's speed, flexibility, and ability to grow as your company grows makes it a great accounting package.—Mary Ellen Andersen

CYMA Professional Accounting Series

The CYMA Accounting Serier was one of the first accounting packages to appear afier IBM announced the PC. Now owned by McGraw-Hill, the CYMA Professional Accounting Series is a much-revised highlet comprises many modules plus a variety of specially items such as job costing, medical and dental accounting, and a data call and dental accounting, and a data of control Ledger will for SVPS, while Accounts Payable and Accounts Receivable self or SVPS each.

The package is easy to install, but you must display a registration screen and call CYMA/McGraw-Hill during business hours for a special code that unlocks each package.

With a little creativity, you can design a



Some functions in CYMA Professional Accounting Series are accessed in peculiar ways: here, for example, you can edit a budget or a priorperiod screen, as well as enter the account name.

chart of general ledger accounts with many reporting levels. By using a wildcard select option available in most of the reports. you can easily print the detail you want. New accounts are entered quickly, but budgets and prior periods are time-consuming, requiring you to enter the period number and the amount. Account numbers are verified when you enter transactions. The screen shows a document total, a batch total (daily), a journal total (one of 26), and a total for the entire ledger. Journal reports can be listed by date, by account, or in order of entry, or you can choose to develop custom reports with a report formatter.

Transaction entry in the Accounts Payable module is quick but inadequate. Multiple general-ledger expense accounts must be entered as separate transactions. When paid invoices are purged at monthend, the record number changes, and it is difficult to find a transaction without printing a vendor ledger.

You can modify the check format in the Accounts Payable module by using a report design program that's available for all modules in the system.

The Accounts Receivable module lets you customize your billing form to make bills or statements by using the general report formatter included with the system. Customer codes can be tracked as openitem or balance-forward customers.

Data entry with CYMA is fast, even on

an XT, but saving and editing can be clumsy. For saving, some screens require an S to be entered, while others automatically save. Entering F takes you back one question-most of the time. When you edit, you must know the record number and return through all questions to complete the

CYMA offers no tutorial. However, sample files are given so that you can play with the package before you register it. Training is provided by CYMA dealers, authorized CYMA consultants (independent accounting firms and data processing consultants approved by CYMA), and from CYMA in selected chies all over the United States. You can also contact CYMA for direct support, but have your





CYMA Professional Accounting Series, Version 2.3 CYMA/McGraw-Hill 1400 E. Southern Tempe, AZ 85282 (800) 292-2962

(602) 831-2607

List Price: General Ledger, \$795; Accounts
Receivable, Accounts Payable, \$695 each.
Also available: two other modules; multiuser, CPIM 86, MPIM 86 versions; additional multiuser module that makes all other
modules multiuser, \$695.
Receutres: 256K RAM: two disk drivers or

hard disk; condensed type or 132-column printer; DOS 2.0 or later. In Short: Fast, flexible, and complete. Sug ports monochrome or color monitor. The screen could use a fittle work. Not copy pretected, but registration procedure required. credit card ready when you do. CYMA's report formatter is a bit technical, but a little study will give you a powerful reporting

The CYMA package has come a long way since 1981. It lacks a sophisticated user interface, but its reporting flexibility, report formatter, and speed make it a good contender in your search for an accounting system.—Mike Falkner

Double Entry

Double Entry, from Systems Plus, is an entry-level accounting system derived from Accounting Plus, another package from the same company. The \$595-permodule package has many features appropriate for small businesses with simple ac-

counting needs, and it's fairly easy to use. The General Ledger, Accounts Receivable, and Accounts Payable modules, which cost \$495 each when purchased together, make up a well-integrated system. The Accounts Payable and Receivable

ouble Entry's
Accounts Payable and
Accounts Receivable
are comprehensive
and powerful.

modules perform well, but General Ledger lacks budgeting capabilities and has only limited reporting capabilities.

intinot reporting capacities. Double Early is user manual shows you how to install the program into the root discretory, but a better method is to create a subdirectory for the program. Installing the program goes smoothly, but setting up a chart of accounts and beginning balances can be a little awkward. Although you use the General Ledger module to set up new accounts, you must exit and enter the Utilities module to create beginning balances for worr new accounts.



Double Entry keeps a running balance of the journal at the bottomright-hand corner of the journal entry screen so that you can easily detect out-ofbalance journals.

The PC's function keys access all of Double Entry's capabilities, and the bottom of each screen displays their use. But function key assignments that are consistent from screen to screen would improve

the efficiency of the on-line help.

A more successful attempt to make the system easier to use is *Double Entry*'s friendly data entry mode. It gives you continuous, on-line access to all master files and their codes. The information you need

is usually only a keystroke away.

A minor yet troublesome problem can
occur when you enter the day's date, as
Double Entry prompts you to do each time.
Double Entry bear to software. If you enter
a date other than the current system date,
Double Entry Sadnegs the DOS date. You
must then remember to reset it when you
exit the system.

POWER PLIS The Accounts Payable and Receivable modules are comprehensive and powerful. Accounts Payable allows recurring transactions and handles discounts and dates very well. After only we established the terms for a vendor, the contraction of the payable transactions. When you pay invoices, the count date when entering accounts payable transactions. When you pay invoices we system notifies you if the discount period system notifies you if the discount period is simple, and you can make partial payments.

Accounts Receivable allows recurring transactions and permits finance charges as well as periodic payments. The only ap-

parent drawback is that you cannot store a "ship-to" address in the customer master record, so you have to input it every time you invoice a customer who has one.

Double Entry produces all the standard reports most businesses need. It requires preprinted forms that comform to the system's fixed formats for invoices, state-

ments, checks, and so forth.

The package's security system is extremely flexible. You can assign each user





Version 1.30 Systems Plus Inc. 500 Clyde Ave. Mountain View, CA 94043 (800) 222-2701

94043 (800) 222-7701 (800) 222-7707 (in (415) 969-7047

List Price: General Ledger, Accounts Payable, Accounts Receivable, \$595 each; \$495 each when you buy three or more modules together. Also available: two other modules,

getter: Asso available: two other modules, plus utilities disk. Requires: 256K RAM; hard disk; condensed type or 132-column printer; DOS 2.0 or later. In Short: A solid, fairly easy-to-use accounting package that is limited in capabilities contifering in court preforms the basic recount.

sidering its cost; performs the basic account ing functions that small businesses require. Not copy protected. CHICLE SECONFEADER SERVICE CAND





1:24: "They want the report in the morning. I'll be here all night."



3:47: "This is going too fast. I must be forgetting something."



5:05: "Having saved the day again, our bero rides off into the sunset."

DataEase. The tool for the applications generation.

By now almost everyone knows what a PC can do for them. The problem, though, for most people, is getting the PC to do it. Because powerful application develop-

Because powerful application development systems are often too difficult to learn. And easy systems quickly become too limiting once you've learned them.

That's why most of the FORTUNE 500 companies are now using DataEase." DataEase. No other system builds powerful applications as easily.

People start building applications immediately with DataEase Even people with no PC experience Because DataEase lets you concentrate on what you want to do instead of how toget the PC to doi: Menus and prompts help you set up your forms, files and reports while DataEase does the programming for you.

And experienced users build complex applications quickly with DataEase. The automatic programming leatures along with a powerful relational query language make it easy. And the power of DataEase increases as you demand more. Making the transition to building complex applications smooth. And easy.

And changing a DataEase application

is as easy as changing your mind. So your applications can grow to meet your needs

With DataEase you can create applications that integrate text, graphics and data from a variety of sources—including mainframes. In the comfort of your own PC.

frames. In the comfort of your own PC.

DataEase. Now it's easy for every member of the applications generation to generate their own applications.

Send us the coupon for a free DataEase demonstration disk. Or call 1-800-334-EASE. In Connecticut,

nore information about LAN
Trie
Phone
0 □11-50 □51+ OMPWIBLES □WANG □DEC □OTHER

Software Solutions, Inc. is now DataEase International, Inc.



Summary of Features: High-Priced Accounting Packages (Module Prices and Extras)

	A&S Accessing Modeles	The Accounting Partner Ples	ADS Besiness Software	BPI Enterprise Series	Bristel letegrated Accounting System	Besiness Pertner Accosoling Software	CertiFLEX	Cherter- Hoose		Double Entry
Basic price*	\$900	\$795	\$1,185	\$2,385	\$2,400	\$2,385	\$2,085	\$2,400	\$2,185	\$1,785
General Ledger	\$300	included	\$395	\$795	\$800	\$795	\$695	\$1,000	\$795	\$595
Accounts Payable	\$300	Included	\$395	\$795	\$800	\$795	\$695	\$700	\$695	\$595
Accounts Receivable	\$300	Included	\$395	\$795	\$800	\$795	\$695	\$700	\$695	\$595
Payroll	\$300	Included	\$395	\$795	\$800	\$795	\$695	N/A	\$695	\$245
Fixed Assets	\$300	NA	NA	N/A	\$800	NA	\$695	N/A	N/A	N/A
Inventory	N/A	\$395	N/A	\$795	\$800	\$895	\$695	\$1,700	\$995	\$595
Job Cost	N/A	N/A	NA	N/A	\$2,000	N/A	N/A	N/A	N/A	N/A
Materials Management	N/A	N/A	NA	NA	\$460	N/A	N/A	N/A	N/A	N/A
Purchasing	N/A	N/A	NA	N/A	\$800	\$895	\$895	\$700	N/A	N/A
Report Writer	\$300	\$395	N/A	NA	Included	N/A	\$349	\$700	N/A	N/A
Sales/Order Entry	Included	N/A	NA	NA	\$1,600	\$895	\$695	\$700	Incl. in Inventory	N/A
Seles Analysis	N/A	NA	N/A	NA	Incl. in Accts. Rec.	NA	N/A	Incl. in	NA	N/A
Time Billing	N/A	\$950	N/A	N/A	\$800	N/A	N/A	N/A	N/A	N/A
Network version									•	0
Networks supported:										
3Com Corp.		0		0	•		•	0	•	0
Novell Inc.		0				•	•	•	•	0
1BM Corp.		0			•	•	•		•	0
Multiuser version										0

	Easy- Besidess Systems	Excelliber Ples	Flexwore	Focus ee Bosleess	Great Piales Accessing Series	Harmony	Besiness Adviser	Income II	Libra Accounting Software	Macola Accounting Software
Basic price*	\$2,085	\$2,065	\$2,385	\$1,950	\$2,065	\$1,797	\$1,745	\$2,085	\$5,850	\$2,385
General Ledger	\$695	\$895	\$795	\$650	\$695	\$599	\$995	\$695	\$1,950	\$795
Accounte Payable	\$695	\$895	\$795	\$650	\$695	\$599	\$995	\$695	\$1,950	\$795
Accounte Receivable	\$695	\$695	\$795	\$650	\$895	\$599	\$995	\$695	\$1,950	\$795
Payroll	\$795	\$695	\$795	\$850	\$695	\$599	\$995	\$995	\$2,500	\$795
Fixed Assets	N/A	N/A	N/A	NA	NA	N/A	N/A	N/A	N/A	\$895
Inventory	\$595	\$695	\$796	\$850	\$695	\$799	\$995	\$995	\$1,950	\$895
Job Cost	\$795	\$695	\$795	\$650	N/A	N/A	N/A	N/A	\$1,950	N/A
Materials Management	N/A	N/A	NA	NA	NA	NA	N/A	N/A	\$2,500	N/A
Purchasing	N/A	\$695	\$795	NA	\$395	NA	N/A	\$995	N/A	\$895
Report Writer	\$195	N/A	Included	N/A	\$395	\$299	N/A	\$995	N/A	\$895
Sales Order Entry	\$595	\$695	\$795	\$650	\$695	\$799	\$995	\$995	\$2,500	\$895
Sales Analysis	\$395	N/A	Incl. in Sales Order Entry	N/A	NA	NA	N/A	N/A	N/A	Included
Time Billing	\$995	N/A	N/A	N:A	NA	N/A	N/A	N/A	N/A	N/A
Network version			•	0	•	0	•	0		
Networks supported:										
3Com Corp.	•	•	•	•	•	0	0	•		
Novell Inc.	•	•			•	0	0			
IBM Corp.	•	•	•			0	•	•	0	
Multiuser version				0		- 0				

[—]Indicates Editor's Choice — Yes — No NA—Not applicable module not offered. "Except where a special manufacturer's price applies, basic price is the combined cost of the three single-user General Ledger, Accounts Receivable modules, shown here for comparison.

	M'A'8	MCB Busines Softwor	s Busin	ess Accee	itles Acci	cations punting pitwers	(Most Valoable Partner)	Myle Myke	NewYiews
Basic price*	\$2,385	\$2,250-\$3,60	00 \$1.	875 \$1	485	\$1,785	\$1,485	\$2,385	\$695
General Ledger	\$795	\$750-\$1,20	00 8	625	495	\$595	\$495	\$795	Included
Accounts Peyable	\$795	\$750-\$1,20	00 5	625	495	\$595	\$495	\$795	Included
Accounts Receivable	\$795	\$750-\$1.20	00 S	625	495	\$595	\$495	\$795	Included
Payroli	\$795	\$750-\$1,20	00 S	625	495	\$595	\$495	\$795	Included
Fixed Assets	N/A	N.	/A	N/A	N/A	\$395	N/A	N/A	Included
Inventory	\$795	\$750-\$1.50	00 \$	625	595	\$595	N/A	\$795	Included
Job Cost	N/A	N.	/A	N/A :	1995	\$595	N/A	N/A	Included
Materials Management	N/A	\$750-\$1.50	00	N/A	N/A	N/A	N/A	N/A	Included
Purcheeing	\$795	\$750-\$1.50	00	N/A	N/A	\$395	N/A	\$795	Included
Report Writer	N/A	\$750-\$1.50	00	N/A	N/A	N/A	Included	N/A	Included
Sales/Order Entry	\$795	\$900-\$1.50	00	N/A :	495	N/A	Included	\$795	Included
Sales Analysis	N/A	N.	/A	N/A	N/A	N/A	Included	\$795	Included
Time Billing	N/A	N.	/A	N/A	N/A	\$495	N/A	N/A	Included
Network version			-	•			0	0	4
Networks supported:	•		•	•	•	•			•
3Com Corp.	0		•	•	•	0	0	•	•
Novell Inc.	•		•	•	•	•	0	•	
IBM Corp.			•	•	•	.0	0	•	
						-	0	_	4.3
Multiuser version	Open Systems Accepating			The ProFit	PRO-IV	RealWorld Accounting	Softwere	38	
	Accounting Settware	Pielicem	Pomerpec	Series	Accomples	Accounting System	Softwere A La Cerie	Selemos III	TCS
Multiuser version	Accounting Seltware \$2,365	\$2,385	\$765	Series \$6,185	Accoustest \$2,100	Accounting System \$2,065	Softwere A La Cerie \$1,499.85	Selemoe III \$2,365	TCS \$2,385
Besic price* General Ledger	Accounting Software \$2,365 \$795	\$2,385 \$795	\$765 Included	\$6,185 \$2,995	\$2,100 \$700	Accounting System \$2,065 \$895	Softwere A La Cerie \$1,499.85 \$499.95	\$2,385 \$795	TCS \$2,385 \$795
Besic price* General Ledger Accounts Payable	Accounting Settwere \$2,365 \$795 \$795	\$2,385 \$795 \$795	\$765 Included Included	\$6,185 \$2,995 \$1,595	\$2,100 \$700 \$700	Accounting System \$2,065 \$895 \$695	Softwere A La Cerie \$1,499.85 \$499.95 \$499.95	\$2,365 \$795 \$795	TCS \$2,385 \$795 \$796
Besic price* General Ledger Accounts Psyable Accounts Receivable	Accounting Software \$2,365 \$795 \$795 \$796	\$2,385 \$795 \$795 \$795	\$765 Included Included Included	\$6,185 \$2,995 \$1,595 \$1,595	\$2,100 \$700 \$700 \$700	Accounting System \$2,065 \$695 \$695 \$695	Softwere A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95	\$2,365 \$795 \$795 \$795 \$795	TCS \$2,385 \$795 \$795 \$795
Besic price* General Ledger Accounts Psyeble Accounts Receivable Psyroll	Accounting Seftware \$2,365 \$795 \$795 \$796 \$795	\$2,385 \$795 \$795 \$796 \$796	\$765 Included Included Included N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595	\$2,100 \$700 \$700 \$700 \$700 \$700	Accounting System \$2,065 \$895 \$895 \$695 \$695	Software A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95 \$499.95	\$2,365 \$795 \$795 \$795 \$796 \$796	TCS \$2,385 \$795 \$795 \$795 \$795
Besic price* General Ledger Accounts Peyeble Accounts Receivable Payroll Fixed Assets	Accounting Settwere \$2,385 \$795 \$795 \$796 \$795 \$695	\$2,385 \$795 \$795 \$796 \$796 \$796 N/A	\$765 Included Included Included N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 \$1,595 N/A	\$2,100 \$700 \$700 \$700 \$700 \$700 \$700 \$525	Accounting System \$2,065 \$895 \$695 \$695 \$695 N/A	Software A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95 \$499.95	\$2,365 \$795 \$795 \$795 \$795 \$795 \$795 \$795	TCS \$2,385 \$795 \$795 \$795 \$795 \$595
Besic price* General Ledger Accounts Psyeble Accounts Receivable Psyroll Fitzed Assets Inventory	Accounting Settware \$2,386 \$795 \$795 \$796 \$795 \$695 \$795	\$2,365 \$795 \$795 \$795 \$795 \$795 N/A \$796	\$765 Included Included Included N/A N/A Included	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 \$1,595 N/A \$1,595	\$2,100 \$700 \$700 \$700 \$700 \$700 \$700 \$525 \$700	Accounting System \$2,065 \$695 \$695 \$695 \$495 N/A \$696	Softwere A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95 \$499.95 N/A \$499.95	\$2,365 \$795 \$795 \$796 \$796 \$796 \$796 \$795 \$795	TCS \$2,385 \$796 \$796 \$796 \$796 \$796 \$796
Besic price* General Ladger Accounts Payable Accounts Receivable Payroll Fland Assets Innovational Job Cost	Accounting Settwere \$2,385 \$795 \$795 \$796 \$795 \$695	\$2,385 \$795 \$795 \$796 \$796 \$796 N/A	\$765 Included Included Included N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,995 Incl. in	\$2,100 \$700 \$700 \$700 \$700 \$700 \$700 \$525	Accounting System \$2,065 \$895 \$695 \$695 \$695 N/A	Software A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95 \$499.95	\$2,365 \$795 \$795 \$795 \$795 \$795 \$795 \$795	TCS \$2,385 \$795 \$795 \$795 \$795 \$595
Basic price* Seneral Ledger Accounts Peyable Accounts Receivable Payroll Flace Assets Inventory Job Cost Materiale Management	Accounting Settware \$2,365 \$795 \$795 \$795 \$795 \$695 \$795 \$695 \$695 \$695	\$2,385 \$795 \$795 \$795 \$795 \$795 N/A \$795 N/A	\$765 Included Included Included N/A N/A Included N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,996 Incl. in	\$2,100 \$700 \$700 \$700 \$700 \$700 \$525 \$700 N/A	Accounting System \$2,065 \$895 \$895 \$895 \$895 N/A \$696 \$695 N/A	Software A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A	\$2,385 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$796 \$796	TCS \$2,385 \$795 \$795 \$795 \$795 \$595 \$795 \$795 \$79
Basic price* General Ladger Accounts Psyable Accounts Receivable Payroll Inventory Job Cost Materials Management	Accounting Settween \$2,365 \$795 \$795 \$795 \$795 \$795 \$795 \$695 \$795 \$695 \$695 \$695	\$2,385 \$795 \$795 \$795 \$795 N/A \$795 N/A N/A	\$765 Included Included Included N/A N/A Included N/A N/A	\$eries \$6,185 \$2,995 \$1,595 \$1,595 \$1,595 \$1,595 \$2,995 Incl. in Inventory \$1,595	82,100 \$700 \$700 \$700 \$700 \$700 \$525 \$700 N/A N/A	Accounting System \$2,065 \$896 \$895 \$695 \$495 N/A \$696 \$695 N/A	Software A La Cerite \$1,499.85 \$499.95 \$499.95 \$499.95 \$499.95 N/A N/A	\$2,385 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$796 \$796	TCS \$2,365 \$795 \$795 \$795 \$595 \$796 N/A N/A
Besic price* General Ledger Accounts Psysble Accounts Recelveble Psyroll Insed Assets Inventory Job Cost Materials Management Purchasing Report Writer	Accounting Settware \$2,365 \$795 \$795 \$795 \$795 \$695 \$795 \$695 \$695 \$695	\$2,385 \$795 \$795 \$795 \$795 \$795 N/A \$795 N/A	\$765 Included Included Included N/A N/A Included N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,996 Incl. in	\$2,100 \$700 \$700 \$700 \$700 \$700 \$525 \$700 N/A	Accounting System \$2,065 \$895 \$895 \$895 \$895 N/A \$696 \$695 N/A	Software A La Cerie \$1,499.85 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A	\$2,385 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$796 \$796	TCI \$2.385 \$796 \$796 \$796 \$796 \$796 \$796 \$796 \$796
Basic price* Beneral Lodger Accounts Psysble Accounts Psysble Accounts Psecivable Psyroll Place Assets Avenues Basets Accounts Ac	Accounting Settwere \$2,365 \$795 \$795 \$795 \$795 \$695 \$765 \$695 \$695 \$695 \$695 \$695	\$2,385 \$795 \$795 \$795 \$795 \$795 N/A \$795 N/A N/A \$795 \$995	\$765 Included Included Included N/A N/A Included N/A N/A N/A	\$eries \$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,995 Incl. in Inventory \$1,595 N/A	\$2,100 \$700 \$700 \$700 \$700 \$700 \$700 \$525 \$700 N/A \$700 N/A	Accounting System \$2,065 \$696 \$696 \$696 \$696 \$696 \$696 \$696 \$6	Software A La Carte \$1,499.95 \$499.95 \$499.95 \$499.95 NA \$499.95 NA NA NA NA S499.95	\$2,365 \$795 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$796 \$995 N/A	TCI \$2,381 \$795 \$795 \$795 \$796 \$796 \$796 \$796 \$100 \$796
Basic price* Beneral Ledger Leccounts Psybble Leccounts Reservable Hyproll Hand Assets Inventory Nob Cost Hand Management Purchasing Seport Witter Bales Order Entry Sales Analysis	Accusting Settwere \$2,365 \$795 \$795 \$795 \$795 \$695 \$695 \$695 \$695 \$596 \$595	\$2,385 \$795 \$795 \$795 \$795 \$795 N/A \$795 N/A N/A \$795 \$995 \$695	\$765 Included Included Included N/A N/A Included N/A N/A N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 \$1,595 \$2,995 Incl. in Inventory \$1,595 N/A Incl. in Job Cost	\$2,100 \$700 \$700 \$700 \$700 \$700 \$525 \$700 N/A N/A \$700 N/A	Accounting System \$2,085 \$895 \$895 \$895 \$895 \$495 \$495 \$495 \$495 \$495 \$495 \$495 \$4	Softwere A La Carte \$1,499.95 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A N/A N/A \$499.95	\$2,365 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$796 \$996 N/A \$896 \$896 \$895	TCS \$2,385 \$795 \$795 \$795 \$795 \$595 \$795 \$795 \$79
Desic price* Demeral Ledger Accounts Peyable Accounts Receivable Payroll Pand Assets www.nory Dob Cost Materials Management Purchasing Deport Witer Sales Order Entry Sales Time Billing	Accounting Settware \$2,385 \$795 \$795 \$795 \$795 \$795 \$795 \$895 \$795 \$895 \$795 \$895 \$895 \$895 \$895 \$895 \$895 \$895 \$8	\$2,385 \$795 \$795 \$795 \$795 \$796 N/A \$795 N/A N/A \$795 \$795 \$995 \$695	\$765 Included Included Included N/A N/A Included N/A N/A N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,996 Incl. in Inventory \$1,595 N/A Incl. in Job Cost	\$2,100 \$700 \$700 \$700 \$700 \$700 \$525 \$700 N/A N/A \$700 \$700 \$700 \$700 \$700 \$700 \$700 \$70	Accounting System \$2,655 \$895 \$895 \$895 \$895 \$895 \$104 \$596 \$695 N/A \$696 \$895 \$895 \$895	Softwere A La Carte \$1,499.95 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A N/A N/A \$499.95	\$2,385 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$995 N/A \$896 \$896 \$895	TCS \$2,385 \$795 \$795 \$795 \$795 \$795 N./A \$795 \$100 \$795 N./A
Besic price* General Ledger Accounts Peetelve Payroll Briand Assets Inventory Ledger Hand Assets Inventory Ledger Hasterials Management Ledger Hasterials Managem	Accounting Settware \$2,385 \$795 \$795 \$795 \$795 \$795 \$795 \$895 \$795 \$895 \$795 \$895 \$895 \$895 \$895 \$895 \$895 \$895 \$8	\$2,385 \$795 \$795 \$795 \$795 \$796 N/A \$795 N/A N/A \$795 \$795 \$995 \$695	\$765 Included Included Included N/A N/A Included N/A N/A N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,996 Incl. in Inventory \$1,595 N/A Incl. in Job Cost	\$2,100 \$700 \$700 \$700 \$700 \$700 \$700 \$700 N/A N/A \$700 N/A \$700	Accounting System \$2,085 \$895 \$895 \$895 \$895 \$695 N/A \$595 \$895 \$895 \$895 \$895	Software A La Carte \$1,499.95 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A N/A N/A \$499.95	\$2,365 \$795 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$995 \$995 \$995 \$995 \$995	TCI \$2,381 \$796 \$796 \$796 \$796 \$796 N/A \$796 \$796 N/A
Besic price* General Ledger Accounts Peyeble Accounts Receivable Payroll Insed Assets Inventory Job Cost Materials Management	Accounting Settware \$2,385 \$795 \$795 \$795 \$795 \$795 \$795 \$895 \$795 \$895 \$795 \$895 \$895 \$895 \$895 \$895 \$895 \$895 \$8	\$2,385 \$795 \$795 \$795 \$795 \$796 N/A \$795 N/A N/A \$795 \$795 \$995 \$695	\$765 Included Included Included N/A N/A Included N/A N/A N/A N/A	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,996 Incl. in Inventory \$1,595 N/A Incl. in Job Cost	\$2,100 \$700 \$700 \$700 \$700 \$700 \$700 \$700 N/A N/A \$700 N/A \$700	Accounting System \$2,085 \$895 \$895 \$895 \$895 \$695 N/A \$595 \$895 \$895 \$895 \$895	Software A La Carte \$1,499.95 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A N/A N/A \$499.95	\$2,365 \$795 \$795 \$795 \$796 \$796 \$796 \$796 \$796 \$796 \$995 \$995 \$995 \$995 \$995	TCS \$2,385 \$795 \$795 \$795 \$795 \$795 N./A \$795 \$100 \$795 N./A
Besic price* General Ladger Accounts Receivable Plyroll Fixed Assets Inventory Job Cost Materials Management Purchasing Apport Witter Sales Order Entry Sales Tims Billing Network version Networks supported:	Accounting Settware \$2,385 \$795 \$795 \$795 \$795 \$795 \$795 \$895 \$795 \$895 \$795 \$895 \$895 \$895 \$895 \$895 \$895 \$895 \$8	\$2,385 \$795 \$795 \$795 \$795 \$796 N/A \$795 N/A N/A \$795 \$795 \$995 \$695	\$765 Included Included Included NIA NIA Included NIA NIA NIA NIA NIA NIA	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 N/A \$1,595 \$2,996 Incl. in Inventory \$1,595 N/A Incl. in Job Cost	\$2,100 \$700 \$700 \$700 \$700 \$700 \$100 \$100 \$	Accounting System \$2,085 \$895 \$895 \$895 \$895 \$695 N/A \$595 \$895 \$895 \$895 \$895	Settware A La Certe \$1,409.55 \$499.95 \$499.95 \$499.95 N/A \$499.95 N/A N/A N/A N/A S499.95	\$2,365 \$795 \$795 \$795 \$795 \$795 \$795 \$796 \$796 \$995 N/A \$896 \$895 \$895	TCS \$2,385 \$795 \$795 \$795 \$795 \$795 N./A \$795 \$100 \$795 N./A
Bealc price* General Lodger Accounts Peyable Accounts Receivable Payroll Bealch Assets Inventory Lobo Cost Batterials Management Purchasing Report Writer Sakes Order Entry Sakes Analysis Time Billing Network supported: 30cm Corp. 30cm Corp.	Accounting Settware \$2,385 \$795 \$795 \$795 \$795 \$795 \$795 \$895 \$795 \$895 \$795 \$895 \$895 \$895 \$895 \$895 \$895 \$895 \$8	\$2,385 \$795 \$795 \$795 \$795 \$796 N/A \$795 N/A N/A \$795 \$795 \$995 \$695	\$765 Included Include	\$6,185 \$2,995 \$1,595 \$1,595 \$1,595 \$1,595 \$1,595 \$2,995 Incl. in Inventory \$1,595 Incl. in Job Cost Incl. in	\$2,100 \$700 \$700 \$700 \$700 \$525 \$700 N/A N/A \$700 \$525 \$700 N/A	Accounting System \$2,085 \$895 \$895 \$895 \$895 \$695 N/A \$595 \$895 \$895 \$895 \$895	Settwere A La Certe A La Certe S1.409.95 \$499.95	\$2,365 \$795 \$795 \$795 \$795 \$795 \$795 \$796 \$796 \$995 N/A \$896 \$895 \$895	TCS \$2,385 \$795 \$795 \$795 \$795 \$795 N./A \$795 \$100 \$795 N./A

	ABS Accounting Modules	The Accounting Partner Plus	ADS Business Software	BPI Enterprise Series	Bristol Integrated Accounting System	Business Partner Accounting Settures	CertiFLE
Jeneral Lodger	- Cont						
Chart of accounts code size*	7N	8N 3 .	- 10 N	12 A	8 N	8 N	10 A
Persuit account structure*	NNNNN-NN	NEWNAN	1000000000	***************************************	NNNNNNN	NNNN-NN-NN	None
io, of predefined accounts	None	25	52	56	None	None	None
io. of characters for entry description	22	25	100	60	30	20	30
reneaction entry limit	\$999 million	\$100 million	\$100 million	\$100 million	\$100 million	\$100 million	\$100 m
accounting periods	13	12	13	13	12	13	12
lo. of standard reports	22	10	8	60	14	12	10
Accounts Pavable	-		-				
to. of characters for vendor code	6A	10 A	7 N	6A	5.A	7 A	5
lo. of characters for invoice entry description	20	None 173	25	40	None	None	None
lo, of standard reports	28	7	8	14	12	16	10
Accounts Receivable	100	in the last					
No. of characters for customer code	6A	10 A	7N	6A	6A	8.8	5A
to. of characters for salesperson code	30	15	20	8	2	3	2
lo. of characters for invoice entry description	None	120	11	40	None	10	24
lo. of standard reports	24	5	11	16	23	15	14
Ship-to" address for customer	0.	•	0	. College 3	• 10 10 10	0	•
Bill-to" address for customer	•	•	· Brints	· San State		•	•
netalistion and Setup			-			-	
Menu-driven	0				•	•	•
ncludes checklist	0 17.48	• 1P1	· Palling	0	0.0	0	0
ncludes eystem operation procedures lieta	•	•	•	•	•	•	0
ncludes demonstration data filee	0	0	•		0	•	0
stimated installation time (hours:minutes)	0:30	1:00	0:20	0.45	1:00	2:00	0:45
Comes with tutorial and an arrangement of the context sensitive	0	0	•		0.5	000	0
documentation	O	0	O	•	•	0	0
ncludes data entry forms			· Cartistan sh	· Protection	O	-13	0
Wows access to mester files during data entry	0	0	0	•	•	•	0
Data Security and Access		-					
ndividuel passworde		0	0	•	•	•	0
Passwords for individual modulee	•	0	•	•	•	•	•
Passwords for Individual menu functions	· 50°	0 .	0	0	• 455	•	
Grants menu-item access rights to user	· Bin	0	0	0		•	0
Interface to Other Systems							
Select and extract data in:	A.C	1. 1100年		Acciona	No. of the last		
.DIF formet	0	0	0	0	0		0
ASCII format	0	0	•	•	•	0	•
Other output formats supported	None	None 5	1-2-3 #RASE III	1-2-3	1-2-3, dBASE III	None	1-2-3
and the same	and the second	Separate 1	GBASE III	dBASE, SuperCein	GBASE III		
Loads master file data from other systems	0	O.	0	0	O	ACCURATION NAMED IN	0
Loads transaction file data from other systems		Ö	0	0	0	0	0
— Indicates Editor's Choice ●—Yes ○—No							

Summary of Features: High-Priced For an extensive summary of these peckages' character-

	CharlerHouse	CYMA Professional Accounting Series	Double Entry	Essy@asiness Systems	Essaliber Plos	Fiezware	Focus on Business	Great Plains Accounting Series	Harmony	IBM Business Adviser	Income II
4.5	8 A	12 A		12 A	7A MAMAA	5N Nedsten	SN NOONNINN	11N	12 A «Variable	14 A	10 N
	200 25 \$999 million 13	None 30 \$10 billion 13 7	Unlimited 26 \$9 million 12	91 24 \$1 billion 13 24	None 30 \$999 million 12 29	None 30 \$999 million 13	77 30 \$10 million 12 17	Unimited 30 \$10 million 18	68 24 \$10 billion 13 2.: 24	57 400 \$99 million 53 100	None 25 \$999 milli 12 7
	5 A 30 12	8 A 28 18	8 A 25 5	8A None 15	8 A 30 22	8A 25 12	4N None 5	7N 30 52	8A 24	6 A 400 18	10 15.
1.2	5A 4 90	Unlimited 26	8 A Unlimited : 25 A	6 A Unlimited None	8 A 32 30	8A 3 25	5N 4 None	7N 7 30	8A 10. 24	6 A Unlimited 400	None 15
4.0	53	15 O	10	18 NA	24	•	0	56 • • • • • • • • • • • • • • • • • • •	0	0	14
4	001		000	0	67.5	0	• 4	: 4			
	0	1:00 O	0:15 •	1:00	0:15	0	0:30 O	0.20	0:45	1:40	0:15 • (40)
	0	: 43	•	0	0	0	0	Me	. willian	0	0
7	0	•	0	Optional O			0	N es	Some		
		•	o		0	0	0		0		•
ng.	dBASE III Phus	1-2-3, dBASE, VP-Plenner	None O	dBASE III, SuperCalc	dBASE III	SYLK Medimerge	BASIC	1-2-3. .SDF	None 4	None	1-2-3 dBASE II

MAGAZINI	Libra Accounting Software	Moceia Accounting Software	M*A*8 90	MCSA Business Software	Medeilles Buelsess Seriee	MICA Accounting Series	Micre Beaines Applications Accounting Software	MVP (Mor Valuable Partner)
General Ledger		Section 1						
Chert of accounts code size* Default account structure*	8 N None	10 A	94	10.4	9 N None	6 N None	10 A None	15 A User defined
No. of predefined accounts	3	None	240	None	None	None	None	None
No. of characters for entry description	18	30	30	30	30	25	30	22
Transaction entry limit	\$999 million	\$1 billion	\$999 million-	\$999 million	\$1 million	\$18 million	\$9 billion	\$21 millio
Accounting periods	13	13	13	13	13	113 C. C. C. C.	12 455	13
No. of standard reports	5	17	19	12	10	13	4	8
Accounts Pavable								
No. of characters for vendor code	8	5 A	7.A	6 N	7 N	6 N	6 A	8 A
No. of characters for invoice entry description	18	30	30	30	30	25	24	50
No. of standard reports	18	23	18:	22	7	12	13	8
Accounts Receivable								
No. of characters for customer code	8	6 A	7A	5N	Unlimited	6N -	BA	8.4
No. of characters for salesperson code	4	Unlimited	4A	Unlimited	Unlimited	3	25	3
No. of characters for invoice entry description	18	30	30	30	30	20	30	50
No. of standard reports	14	32	17	17	4	13	5	9
"Ship-to" address for customer "BIII-to" address for customer	* 400 S	857.5	- F	0	· Property	0		•
Installation and Setup				0				
Includes checklist		duran's	A 6 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0		ال مانود و ا	Telephone	0
includes system operation procedures lists	•	•	•	•		•	•	0
Includes demonstration data files	•	•	•	•	•	0	•	•
Estimated installation time (hours:minutes)	1:30	0:30	1:00	0:05	1:50	0:40	0:20	0:15
Comes with tutorial includes on-line, context-sensitive	•	0	0	•	325	Oversions	· CONTRACT	0
documentation	_	_	-			- 1 mm	ALTERNATION THE	0
includes data entry forms Allows access to master files during data entry	:		2	0 3	1000	1		•
							_	
Pata Security and Access				-			-	
individual passwords Passwords for individual modules	0	0	•	•	•	:	•	Ô
Passwords for Individual menu functions	0	:			0 5	A PARAGRA	OMM	0
Grants menu-item access rights to user	•	0		. 18	•	0	0	•
Interface to Other Systems Select and extract data in:						and the same		_
.DIF format	•		- 15	E EAL TH	100	- ANNO		
ASCII format	•	•	•			•	•	•
Other output formats supported	1-2-3, dBASE III	1-2-3, dBASE	1-2-3 dBASE	1-2-3, dBASE, SYLK	1-2-3	SDF	1-2-3. dBASE	1-2-3, Sympho
Loads master file data from other systems	0			STER .	14.	O	O CONTRACTOR	O
Loads transaction file data from other systems	0		Ξ.	-	-	0	•	0

	Myta Myke	NewYlews	Open Systems Accounting Software	Platiteem	Powerpac	The Profit Series	PRG-IV Accountant	Real/World Accounting System	Software A La Carlo	Solomes III	TCS
	5 N NONNIN ALAAA	10 A User	12 A NNNN	8 A Variable	6 A None	5A AAAA	12 N None	7 N NNNN-NNN			10 N
000	97	None	Undefined	67	None	None	None	None	70	184	None
ME	25 \$99 million	31 \$9 billion	30 \$999 million	30 \$100 million	25 \$99 million	30 \$100 million	30 \$1 million	25 \$100 million	30 \$99 million	21 \$99 million	25 \$99 billion
á	12	Unlimited	13 0 5 750	13	12	12	13	10 30000		13	12
	10	None	13	27	24 plus	17	12	6	15	23	22
Į	6 A	10 A	6	5 A	6	3A	10 N	6A	6N	6 A	6A
	25	30	30	40	25	20	None .	None	30	25	None
	14	None	8	25	7	85 360	14	9	23	15	7
	8.A	10 A	6	5 A	6	3A 11 55	10 : 50	6A %	6	6.A	6.A
	3	None	3	5	10	3A	10 3		3.	3 A	3 A
	25 17	30 None	30 12	40 36	25 11	20 6	None 12	None 13	30 37	25	15
	•	• Final			0.		0 biles d		0	•	•
	•	•	A STATE OF	• (134	• 22	• 22//	• 75	•	•		•
i		_									
		0	1	•		1.4	1.76A	0		: 2	
3	•	0	•	•	0			0		•	•
	7:00	0:15	1:15	0:30	0:05	300	100	2:00	200	0:15	0:15
	0	0		•	•		0		0.5	•	
	0	•	0	0	•	0	0	•	•	•	0
	•				1 Sept.	· that	0	0	O I	•	D ASI
	5 1-44	0	•11.7	•	• 16 1	Ourse,	0.	No. of London	-0	0	•
	-			-				2	2		-
	:	•	•	•	•	0	•	•	•	•	•
	0	· KE	Tally.	M.:251	0	0 (22)	1000 C	Contract of		-	0
	O .	•	UNPRE	- Inches	•	Oct	• 3/3	•	•	•	0
											-
			1	- 1/4	0	0	0	- 1			0
	:		1 2 100	0.750	0	•	•		0		•
	None	None	1-2-3. SYLK	1-2-3, SDF	None	1-2-3, dRASE	None	SYLK	OBASE III.	1-2-3, dBASE III	WKS. WBK.
			attract (SHARLES ST	STORES!	personal a	Testa)	attake o		- constant	SYLK
	•	•	0	0	0	0	0	0	0	•	

ARILITY PLIS

GENERAL FEATURES

- 6 Modules for One Price Both 5.25" and 3.5" Media Included
- Vertical or Horizontal Windows Perform DOS Functions from Main Menu System-Wide User Macros
- INTEGRATION

in Document

- Two or More Applications Working at One Time · Real-Time Links; Changes
- made in one Application are Reflected in All Other Applications . Include "Live" Spreadsheet.
 - Calculated Fields and Graph
- WORDPROCESSOR
- · Spelling Checker · What You See Is What You
- Get Formatting Mail Merge (On-Screen
- Preview) • 7 Type Styles (On-Screen) • Fields Perform All Built-in Math Functions
- SPREADSHEET
- 9999 Rows x 702 Columns Global and Local Formats
- 46 Built-in Functions
- · Sort on Row or Column Link Multiple Spreadsheets
- and other applications Sideways Printing 10, 12.
- 15-17 CPI Vertical & Horizontal Windows Spreadsheet Macros

Why Ability Plus should be your first choice.

Fact is, only Ability Plus gives you so much choice. Start with the five most often-used business applications wordprocessing, spreadsheet, graphics, database, and telecommunications. All packaged in one convenient program.

What's more, everything's surprisingly easy to use.

The applications are practically intuitive. And they all work the same way. Once you've learned one, you know how to use all five. A level of mastery that takes only a couple of days.

Now here's the really ingenious part. Ability Plus ties them all together. So if you make a change to data in one application, that change is instantly reflected in any other application where that data appears.

Impressive capabilities, yes. But the power and ease of Ability Plus let you accomplish something equally impressive: DATABASE

· Simple Set-up and Form Design Relational Database

· Data Fields Perform Built-in Math Functions · Multiple Field Types

• 64,000 Records Per File · Recover Records After Accidental Deletion · Backup Feature to Prevent Losing Data

COMMUNICATION • Baud Rate: 300-9600

· Simple, File-Based • Use Other Application While

 Communication Macros X Modem

ADVANCED MACROS Macros Can Be Local or System-Wide

Learn Mode

GRAPH

· 8 Graph Styles

· Graphs Redraw When Linked Applications Change

· Cut and Paste From Clip

Board to Graph · Include Graph in Document

FIRST CHOICE

GENERAL FEATURES 4 Modules for One Price

INTEGRATION · Two or More Applications Working at One Time

WORD PROCESSOR · Spelling Checker

. What You See Is What You Get Formatting

SPREADSHEET 1024 Rows x 512 Columns

· Built-in Finance, Math, and **Date Functions** Global and Local Formats

Design

DATABASE · Simple Set-up and Form

COMMUNICATION • Baud Rate: 300-2400

· Simple, File-based

Concentrate on your work instead of your software.

Which means Ability Plus begins to pay for itself immediately. And continues to pay off for a long, long time, thanks to our long list of features.

Want to find out more about our choice software? Just call 1-800-633-3444. Or return the coupon.

Ability Plus. Its features make it your first choice. Wha it will do for your organization makes it your best choice.

> **Ability Plus Business software for** everybody in your business.

CIRCLE 383 ON READER SERVICE CARD

Nume		Ahility
Title		Phis
Company		11113
Address		100 AV
City 'State/ Zip	A+ PCM 09	- N

an optional individualized password. which can give him access to certain system functions and not others, according to your company's needs

A dependable, fairly easy-to-use accounting package, Double Entry can handle the simple accounting needs of a small business, but the current version's capabilities are limited in comparison with those of similarly priced packages. Systems Plus says that a version designed to handle more advanced accounting needs is in the works, but hedges on giving any release date.-Randall Swearingen

EasyBusiness Systems

Computer Associates International's EasyBusiness Systems accounting software has been on the market for some time under a variety of names. Formerly known as Information Unlimited Software (IUS) and briefly as Sorcium/IUS, the General Ledger, Accounts Pavable, and Accounts Receivable modules retail for \$695 each. Password protection is not included but can be purchased for \$10 more.

Installation is accomplished through a batch file that comes with the software. You must retype the install command for each disk you install.

Data input is generally smooth, although you must use all caps or numbers when assigning alpha IDs to vendors or customers. These are case sensitive and an account ID established as "Travis" will not work with "TRAVIS" or "travis."

The system lets you input dollars without requiring a decimal for pennics-a nice feature except that when the decimal is used, the system ignores it. For example, if \$1,200.00 is input as 1200.00 (using the decimal where indicated), it becomes \$12.00. It would be helpful if the program worked like most calculators, letting the decimal mean something when it is input.

General Ledger/Financial Reporter is the centerpiece of the EasyBusiness Systems line. As with other modules, first entrance to General Ledger places you at the Company Configuration screen, where you set fundamental company information and software switches. Once the system is in use, some choices may not be altered, so



ter: Values(I), Constant(C), Moreth(C), Incremental(I), Inmire(N);

EasyBusiness Systems provides an excellent "worksheet" environment for reviewing and developing budgets.

you should carefully consider how you intend to use the system before making any choices.

Recurring and reversing transactions are archived and retrieved as needed in subsequent periods, a feature that works well with recurring transactions like standard depreciation entries. But the method is not as useful for reversing entries that are most beneficial if automatically reversed in the next period. So, unless several transactions are involved in recurring or reversing entries, this feature may not be a timecover

The Financial Reporter allows numerous reporting possibilities, but it counts printer line feeds and will issue a form feed even if it needs only one line to complete a financial statement. Computer Associates says you can avoid this by inserting a page command with a column heading specification at logical places within the specification document. This isn't very flexible but it does work.

Accounts Payable has good management reporting characteristics, which include aging reports with flexible, user-defined aging periods that can be printed or viewed on-screen. It maintains basic vendor statistics and offers good control over payments.

The company has responded to the growing need for governmental reporting of payments to vendors for services. The system will accumulate these payments when a vendor is specified as a 1099 candi-

Duplicate invoices are monitored, but are reported only when the posting journal is printed. They are deleted from the system and must be reinput if the invoice should be paid, a method that is less disruptive at input than receiving on-screen warnings that require verification before

continuing. GOOD REPORTING Accounts Re-





(408) 432-1723 List Price: General Led-

ger, Accounts Receivable, Accounts Payable, \$695 each. Also available: eight other modules; Network Manager: (four units), \$395: (eight units), \$595; EasyPlus Windowing System, \$149; password protection system. \$10.

Requires: 256K RAM (512K recommended); with EasyPlus Windowing System, two 360K disk drives (31/2-inch disk formats also shipped with Version 4.2); condensed type or 132-column printer; DOS 2.0 or later In Short: This system is standalone in de sign, with the ability to import data from vari-

ous modules. Windowing integrates the system better and allows integration with other programs. Not copy protected. CIRCLE MAZ ON BEADER SERVICE CARD

In a direct comparison between printer sharing devices, our competition would like to remain anonymous.

- · 2, 4 or 6 input ports
- Serial or parallel output
- OKb to IMB of RAM —
 often soldered, not adapt-
- able for memory expansion
 Sequential scanning or
- Warranty 90 days to one
- Compatible with most brinters

- Up to eight serial input borts
- Serial and parallel outputs
 Comment into and and
- Concurrent input and output for all ports
 Fass, menu-driven config-
- uration
 Separate band rate, flow
- control, parity and messages for each port
- Multiple copy command
 Priority print command
- User-definable print direction
- Field expandable memory up to 2MB
 Printer emulation codes and prompt/response messages stored in RAM

- · Automatic top-of-form:
- generation
 Self-testing features
- Self-lesting features
 Buffer clear, pause and top-of-form controls
- LEDs display buffer status, current port activity and printer reads
- Optional parallel/serial
- converter

 Compatible with virtually
 all printers and plotters
- Quality and reliability backed by a one-year warranty; lifetime warranty optional
- Unlimited 800# hotline subbort
- · UL approved





LASERNET™ allows up to eight users to quickly and easily share any two printers or plotters.

For the advanced features you demand from a priner sharing device, at an attractive price, LASERNET is your only choice—for general business, CADICAM and desktop publishing, And, after 23 years of market leadership, you know that Western Telematic will continue to support its products and customers for years to come. So, dorit get left holding the bag, Call us now for a FREE brochure at (800) 854-7226, in California (741) 886-950.



(800) 854-7226 · in california (714) 586-9950 · teles: 467741

ward accounts. It allows for automatic posting of finance charges with the ability to set a minimum, and it will round upward to the minimum when the calculated amount is less.

Statements, letters, and mailing labels can be customized. The credit limit established for each customer is tested, but the system does not issue a warning until the posting journal is printed.

Both Accounts Payable and Accounts Receivable create detail or summary entries for import to General Ledger. When retrieved by General Ledger, these consolidated entries are assigned a unique batch number and become like any other batch of transactions entered directly into General Ledger.

In Version 4.2, the company separated tutorial lessons from reference information-a nice improvement, but the index might have been more intuitive. There was no reference to recurring transactions. EasyBusiness Systems considers recurring transactions as Archived Batches.

Although help text intended for onscreen use is included on disks, the help is not accessible without the aid of the Easy-Plus Windowing System, a separate module. In addition, the Windowing System allows modules to run concurrently behind a window, speeding data transfer between modules.

Procedurally and fundamentally sound, Computer Associates EasyBusiness Systems is proven accounting software and should be considered when making a purchase decision .- William H. Stewart

Excalibur Plus

Excalibur Plus, a \$695-per-module program from Armor Systems of Maitland, Florida, can run on a variety of hardware and operating system configurations. It offers General Ledger, Accounts Pavable, Accounts Receivable, Payroll, Inventory Control, Purchase Orders, Point of Sale, Billing, Order Entry, Work in Process, Customer Information, and Fixed Assets. Installation is menu driven. You begin

by placing a utilities disk in drive A; and typing A:INSTALLP. The system will prompt you for a second utilities disk and will ask you to specify the type of terminal Quit, Add, Change, Belete, View, Ture Sero Off

The Customer Master screen in Excalibur Plus's Accounts Receivable module lets you assign each customer to a pricing class to make sure that he is charged the proper amount.

you are using. You then select the modules you would like to install, and the system prompts you for the appropriate disk. Applications programs and sample data files are loaded next. Then you specify printers, create production data files, and specify data and applications program locations on your hard disk. System utilities handle data file expansion, as well as changes to report formats, reorganization of data files, and backup and restore functions that you may need.

Excalibur's General Ledger contains a total of 32 programs, including a calculator-like amortization scheduler (it doesn't automatically tie into a journal entry). Account numbers are seven digits, with digits I through 3 indicating the prime account. digits 4 and 5 the department, and digits 6 and 7 the subaccount. When setting up a new account, you enter the account number, account type (asset, liability, and so on), account description, current month, and year-to-date balance, as well as prior month of the current year, prior-year, and budget information by period.

Making journal entries is easy, especially since Excalibur has both a one-time and a monthly recurring journal format. Be careful, though, because the system will accept journal entries that are out of balance. Some of Excalibur's unique features include an Employee Master File for tracking after-the-fact payroll information, the ability to print W-2 and 1099 forms, and

various financial change reports. Excalibur comes with both detail and summary (formal balance sheets and prof-

it-and-loss statements, as well as a financial change statement, profit-and-loss analysis, comparative analysis, and quarterly reporting (if you are tracking afterthe-fact payroll). Excalibur does not have general ledger report writer, but it does have a very useful report formatter utility that allows you to make new copies of standard reports, alter the length and width of print on a page, move or suppress data. modify text (such as field descriptions, page headers, or footers), and accommodate report designs up to 240 columns wide. Besides the report formatter, the system will also print any report to the screen, to the printer in any one of ten print





fonts, or to an ASCII file.

Armor Systems Inc. 324 N. Orlando Ave. Maitland, FL 32751 (305) 629-0753 List Price: General Ledger, Accounts Receivable, Accounts Payable \$695 each. Also available: nine other mod-

Requires: 256K RAM; hard disk; DOS 2.0

In Short: Strong high-end accounting package with excellent Accounts Receivable

module. The documentation could be improved. Copy protected. ORCLE 601 ON READER SERVICE CARE

How much computer will \$699*buy?













With the AMSTRAD PC1512, everything is included.

At last! A powerful IBM-compatible personal com-puter with the popular "MOUSE" and software, all at an affordable price. No add-ons needed, just plug it in and gol

Here's what you get:

Monochrome monitor, paper white with 16 gray levels – 360kb double sided floppy disk drive – 512k memory – 8086 processor (8mhz) – "mouse" PC compatible keyboard – Joystick port – Parallel and Serial ports – 3 full sized PC compatible expansion slots - Complete user instructions.

"FREE" Software (\$500 retail value) Microsoft MSDOS V3.2 operating system. Dig

tal Research DOS PLUS operating system, Digital Research "GEM Desktop," "GEM Paint," "GEM Doodle." Locomotive Software "Basic 2" and very detailed, clearly presented user manual.

Optional Features Second Floppy disk drive or 20 MB hard drive,

RGB Color Monitor, 16 colors. It's never been easier to get going on your

own personal computer, It's what you've been waiting for.
The AMSTRAD PC1512 is available

now at better Computer Dealers Nationwide. If your dealer doesn't have them yet, write or call and we'll tell you where you can buy one. 'At participating dealers

the Corners Leading Sign. Special Control of Photograph of States and Control
The complete AMSTRAD PC1512.

Sole U.S. Agent, Vidco, Inc. 1915 Harrison Rd. Longview, Texas 75604 214-297-4898







At Hayes we just found a way to make the best-selling PC modems in the world even better. We lowered their price. From now on our Smartmodem 2400," Smartmodem 2400B," Smartmodem 1200,"

SINGLIMOOTH AND STRAITHTOOM TAKEN STRAITHOOM TOOL "STRAITHOOM TOOK STRAITHOOM






















© 1987 Haves Microcomputer Products, Inc. EO. Box. 105203, Atlanta, GA 30348, 404-441-1617

*Based on estimated retail prices. **Bequires external modern

CIRCLE 105 ON READER SERVICE CARD

COVERING ALL BASES Excalibur lets you enter invoice General Ledger distributions for both the debit and credit sides of a transaction, a nice feature-not found in many of the leading accounting packages-that lets you code a single invoice to multiple liability subaccounts. The ability to individually distribute Accounts Payable liability and bank codes on an invoiceby-invoice, item-by-item basis gives you a system that can account for multiple entities and can accurately track their individual balance sheet items. Cash disbursements can be handled individually or automatically by selecting invoices for payment by range based on vendor number, vendor category, invoice date, discount date, due date, or invoice balance.

The system will also allow you to capture work-order number information for generation of work-in-process reports. The system offers you many reports including a check register, aging schedule, Account Payable trial balance, and vendor history.

You can use the Accounts Receivable module individually or integrated with Inventory, Point of Sale, Order Entry, and Billing modules. It creates a very detailed Customer Master File with fields for key contact, ship via, default carrier, pricing class, tax-exempt ID, and customer status. You can set up user-defined tables to create multiple "ship-to" addresses per vendor, valid salesperson with associated commission data, departments, sales tax tables, and statement messages. You can also enter invoices directly through Accounts Receivable or interfaced through Order Entry. The system will calculate and post service and finance charges. Payments may be applied as either cash or credit card. The system can create a number of reports, including an Accounts Receivable aging schedule, cost/sales analysis, commission statements, and 1099 forms (for resale or commission).

The documentation is not impressive. It for treat. Moreover, it lacks hints on what to do with common errors and gives no field-by-field data entry descriptions. Armor System offers a 2-day introductory count on Excelibre Plus products and a 4-day Advanced Technical Training course for 395. Telephone support is available at a

cost of \$100 per module for 6 months, but

you must pay for the call.

Excalibur Plus is a strong high-end
product, particularly for retailing, wholesaling, and light manufacturing. It can
integrated with cash drawers and bar code
readers. If Accounts Receivable is your
area of greatest interest, this product
should be on your list for consideration.—Patrick Fitzbenry

Flexware

Flexware, a series of \$795 accounting modules from Microfinancial Corp., is aply named. It can run under a number of operating systems and can be reconfigured by dealers. The program is based on the Flexware Database Development System, written in UCSD Pascal, which promotes versatility but which can create problems for DOS installations.

Over the past 10 years, Microfinancial has evolved from systems house to applications developer, with over 1,000 installations serviced by 200 dealers in 21 countries. The company focuses the efforts of its ten staff people on development, leaving most of the marketing and service functions to dealers.

This comprehensive package is not designed for end-user installation, the system supplied for this review came preinstalled on a hard disk. Even then, at the outset there were a few problems with the configuration, but the knowledgeable technicians at the Micro Clinic of Buffalo, the dealer that installed and supported Flexwure for us, solved them quickly.



List Price: General Led-

ger, Accounts Receivable, and Accounts Receivable, and Accounts Papille, 5795 each, Also available: five other modules; other spoisson for membra developers, developers, tools from Mind party developers, developers and produced to the programments, maping from the Account of
In a number of respects, Flexware is intelligently structured and offers sophistcated features and options, especially if it is fine-tuned by the dealer. However, the overall look and feel of the package is not exactly aesthetically pleasing, and some aspects of the configurations in the review package were downright unorthodox and irritatine.

Flexware will perform the basics of recording accounts receivable and accounts payable transactions, creating invoices and checks, interfacing to the general ledger, and producing financial statements. However, accounts payable transactions are not based on vouchers; they are identified by

Batch 1d	[14447]				
Estry Perons Estry Sate Description Accounting Period Actual Debit	111/21/971	I Accepting Year Control Behit	(87)		
Belanced*	ins	Ohecka/ Dweices.	M		

This is a typical batch header screen in Flexware. Transaction batching demands disciplined data entry. Flexware's

demands disciplined data entry. Flexwate's batch control reports also eliminate the need for external, manual logging procedures.

the vendor code and vendor invoice number. General ledger account numbers have five digits, with the decimal point after the third digit. Perhaps most important, Flexware enters all transactions in a batch mode that requires calculation of control totals before entry.

Substitution of the control of the c

Transitions between menus are punctuated by an annoying, nonremovable, copyright notice. On some occasions the program would go into beeping loops, stopped only by using CH-Break. In addition, entry screens do not use video attributes such as highd-dim or reverse video to distinguish between prompts and data folds. Flexware check data fields requiring validation only on completion of a screen instead of at the point of entry.

NIFTY FEATURES Although Flexware is not a pretty program and is cumbersome in spots, it does offer some nifty features. Foremost is its ability to run in a distributed environment incorporating different types of computers. Microfinancial Corp. says it has a system running on a configuration combining a DEC VAX minicomputer, several 68000-processorbased computers (like the Macintosh and Stride microcomputers), and DOS-based machines. Instead of shuttling whole databases through the network from central storage to individual workstations, the system transmits only the data needed to retrieve and update records.

The report writer lets you access any field in the database that integrates all Ceneral Ledger, Accounts Payable, and Accounts Receivable data. Context-sensitive help is available at any point. If you invoke it while you're entering data for a key field, the help system displays a list of records on file and allows you to select an entry. Flexware prints to disk, so hard copy can be produced at a more convenient time. It has some of the most useful dun-

ning utilities and mail-merge/label generators I have ever seen. It supports multiuser access with file and record locking, multitiered password protection down to the field level, and multiple department/profit centers that you can consolidate.

All in all, Flexwar may be just the right choice for companies with diverse hardware and/or unusual requirements. But those companies would be wise to first locate a dealer who can take advantage of a its architecture to spruce it up a bit, while customizing some features quickly and at a reasonable price compared with the cost of BASIC- and CODIJ-based packages. —Gene Smillerwicz

Focus on Business

Yes, software that forces an operator to work as if the year were 1967 still exists! Despite its high-end price (\$650 for each of the modules tested), Focus on Business by International Micro Systems does not measure up to today's standards for PC software.

You must renumber General Ledger accounts to fit the unalterable default ranges, and each account number must have five digits, a decimal point, and three digits. Nothing shorter will be accepted, and the code makes you type that blasted period every time.

Even though Focus on Business is a multiple-company system, there is no option to copy a chart of accounts. Journal entries are batch entered, with each post-

Focus on Business International Micro Systems Inc 6445 Melcalf Ave Shawnee Mission, KS (800) 255-6223 (913) 677-1137 List Price: General Ledger, Accounts Re ceivable, Accounts Payable, \$650 each. Also available: four other modules: Fund Accounting, \$750; QuickBASIC source code, \$400 network version Requires: 512K RAM: hard disk: condensed type or 132-column printer; DOS 3.1 or later. Network version; 640K RAM on file server, 512K on each workstation; 20-Mbyte hard In Short: An expensive, outmoded, unfriendly system. Not copy protected. CRCLE 679 ON READER SERV

ing printed as it is entered. No posting refcrence numbers link debits and credits, so tracing an entry depends entirely on your own reference. Reports print for the current month only; no facility exists to review previous months or compare periods. Recurring monthly postings and reversals are unavailable.

The Accounts Payable module approves each voucher as it is entered. The program gives you no option to print checks by priority, due date, or discount date other than by reviewing each voucher manually. It also won't let you get an ap-



Focus on Business makes you retype the entries on your screen to edit data. The program has no field formatting, so data entry is slow.



Product Excellence AND a Commitment to Service!

Solomon III General Accounting has established the leading reputation for product excellence in accounting software. But product excellence alone is not enough.

When you buy Solomon III, you benefit from the broadest service and support network available:

- Solomon III Certified Consultants provide you with installation, implementation and ongoing support. These trained consultants –from the nation's leading accounting firms—combine their microcomputer and accounting knowledge with their Solomon III expertise.
- Authorized Dealers are selectively chosen and trained to sell and install Solomon III. These dealers are equipped to provide you with a complete system that meets your needs within your budget!
- Local Solomon III training classes are offered to you monthly by instructors who are experts in installing and supporting Solomon III.
- Solomon III User Groups have formed across the nation! These groups provide a forum for you to share ideas, suggestions and solutions for effectively using Solomon III.
- Solomon III Customer Support Plans include technical support from our highly-qualified teleconsultation staff.

Don't take our word for it! Call us at 1-800-822-0444* for the name of an Authorized Dealer or Certified Consultant near you!

*In Pennsylvania, cali 215/644-3344





proved-to-pay report. Every voucher requires manual distribution to the correct General Ledger accounts, since the system remembers only the Accounts Payable account number. Vendor terms and posting accounts must be entered every time, and there is no on-screen reference or lookup punction for General Ledger accounts must be with the properties of the

The Accounts Receivable invoice entry screen displays none of the customer information necessary to complete an invoice. You have to calculate all the dates and amounts (tax. discount, and net) while referring elsewhere for the data. If you exceed a customer's credit limit, you will be rudely kicked out of your invoice, with all the data lost. You have to leave invoice posting to change the credit limit in the customer file, then return to reenter the invoice, thereby leaving the customer with an incorrect credit limit. No option exists for customer additions during invoice entry in the Accounts Receivable module, nor is any equivalent function provided in Accounts Payable or General Ledger.

The user interface can only be described as downright inconsiderate. At \$650 for each of the tested modules, Focus on Business is easily outclassed by software that sells for less.

-Michael Friedlander

Great Plains Accounting Series

Once marketed under the hardware descriptive name the Hardisk Accounting Series, the current accounting series from Great Plains Software is now known simply by the company's name. Version 4.0 or of the Great Plains Accounting Series was senintroduced in April 1986. This year Great was Plains has improved its already powerful, flexible, and easy-to-use program through its release of Version 4.1.

New to Version 4.1 are lookup windows that pop up in each program. If you cannot remember the vendor ID number when entering accounts payable invoices, for instance, you merely type a few charac-



Great Plains Accounting Series's vendor window lets you look up information and in a few keystrokes paste relevant data to the screen.

ten of the vendor name and a lookup window appears with the cursor on the vendor most closely matching the characters you typed. When you select the proper vendor all relevant vendor data is pasted to the invoice entry screen. Similar lookup iniodows can access the customer list, general ledegar accounts, employee list, inventor list, general ledegar accounts, employee list, inventor with viows are used in every module whenever you make a choice. Great Plains gives you a number of fea-

tures to simplify data entry. The Accounts Payable module lets you enter the vendor name and address during invoice entry without plodding through a lengthy setup for vendors who will not be used in the fu-

General Ledger lets you keep the fiscal year open for three periods before it becomes necessary to do the year-end closing, which is useful because many companies are not ready to close the books on the day after year end.

The batch method of transaction entry is used in all modules except inventory, which is handled on-line. With most accounting software, the entiring group counting software, the entiring group control at all. Great Plains requires each batch to be marked for posting; only the marked batches will be posted when the marked batches will be posted when the step to the control at the

The Great Plains documentation is thorough, well researched, and easy to understand. Each screen is pictured in the manual, accompanied by a description of its purpose. Each line and command on the screen is described in detail, and the pages are numbered by screen for quick, easy reference.

General Ledger requires all the financial statement formatting codes to be included with the normal chart of accounts—one of the few cumbersome features in this program because it tends to cutter up the chart with nonpostable accounts. In some cases, only one cash account in General Ledger can be posted to Accounts Receivable and Accounts Payable.





ing Series, Version 4.1 Great Plains Software 1701 SW 38th St Fargo, ND 58103 (800) 345-3276 List Price: General Led-

ger, Accounts Receivable, 60% each. Also available: four other modules: Report Maker Plus, 5395; Network Manuger, 5395. Requires: 384K RAM: bard drsk; condensed type or 132-column printer; DOS 2.0 or later (except for Report Maker Plus and Network).

Manager, which require DOS 3, 1). In Short: A quality high-end accounting system with extensive data entry features and options. Not copy protected. CIPCLE 405 ON PEADER SERVICE CARD.

COMPUTE WHILE YOU PRINT!

-PrintQ`-

FINALLY, A REAL MAINFRAME PRINT SPOOLER FÓR YOUR IBM PC OR COMPATIBLE

If you spend part of your PC time running applications. Part of it printing. And a lot of time waiting . . .

Imagine a program that prints up to 10,000 pages while you run applications.

PrintQ does that. And more. It's the first really complete print spooling subsystem for your PC. And your biggest time saver ever!



Run your application programs as usual, but instead of stopping after the print command. keep right on computing! PrintQ intercepts the docu-ments bound for the printer, spools them to disk, then prints them according to your commands.

NOT COPY PROTECTED

For users of IBM, PC, AT, XT, PCjr and ost IBM compatible



Dealer Inquiries Invited Corporate Licensing Available



"Pop up" status display lets you monitor an control document printing at any time.

WITH PrintQ YOU CAN... · Re-start printing from any page.

- · View documents on screen with or without printing.
- · Print up to 255 copies automatically.
 - Save reports for reprinting. Minimize form changes PrintO
- groups similar documents. · Print in order of priority.
- Simplify forms alignment.

quired.

- Work while printer is down. Copy reports to ASCII files.
- · Control from within a batch file. Use any printer (including laser). · No program modifications re-

... AND MUCH MORE

"Using PrintO could become very addicting, and users may never want to go back to ordinary printing again."

- PC Week

FULLY GUARANTEED

Use PrintQ. If you're not convinced PrintO saves time, increases productivity and enhances printer function, return it within 30 days for a full refund.

Order now and you'll receive the PrintO disk, complete easy to understand documentation, and the Quick Start Card which will have you reaping the benefits of PrintO in seconds.

> Call toll-free or mail the coupon to order now.

1-800-346-7638

In New Jersey Call 201-584-8466 Same day shipping on phone orders CIRCLE 168 ON READER SERVICE CARD

NJ residents add 6% sales ta:

DI California Simuli	ann Inn 1572 Cur	sex Tumpike, Randolph,	N11.07000
YES. Rush me P es productivity and enha	rintQ for just \$89, w	hich includes postage and ha I'm not convinced PrintQ say n, I'll return it within 30 day	ndling (Canada -
Name			
Company			
Address			
City		StateZip	
Check enclosed.	☐ Visa	☐ MasterCard	☐ AmEx.

Great Plains Accounting Series has a wide range of capabilities and is a pleasure to use and operate. Its protection of data is remarkable. During testing, the power went off as transactions were being entered. Only the current record was lost; the rest of the data was fine. All of the backup and recovery programs in the word cannot compare to using a system that rarely requires them—Charles Welnberg.

Harmony

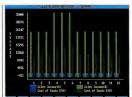
Harmony, a new release from Open Systems (best known for its Open Systems Accounting Software), is an impressive highend integrated accounting package with some interesting financial analysis tools.

These include the ability to make onscreen, bar chart analyses of up to four general ledger accounts; the charts allow some useful graphic comparisons between general ledger account balances and budet figures, last-year results, or any other

pen Systems
markets Harmony as a
"work processing"
program that is easy
to install, learn,
and use

general ledger accounts. Additionally, the system can analyze loans and prepare loan amortization schedules.

Installation is simple, made even easier by documentation that is well written, clear, and to the point. Once the installation program is started, there is nothing more to do but read and respond to the screen prompts and insert the disks requested. As other applications are installed, the System Manager (a separate module) lets you customize the main menu. The result is a ready-to-nu system,



In addition to loan analysis, amortization schedules, and presentifuture value analysis. Harmony provides bar graphs. These can be saved to a word processing file and later used with text to produce highquality reports.

complete with basic company information.

Data backup is possible from within the system. When invoked, the utility has a nice feature that calculates how many disks it will take to complete the backup. Backup can be accomplished at various levels within the system.

You also receive password protection, which allows lockout by module and by activity. For example, it will allow data input but will prevent access to sensitive financial information.

The year-end results need not be held open for closing entries. The system will transfer current-year data files to a last-year data directory so that operations can proceed. Year-end adjustments can then be made to last year's data, and the Update Current Year function will revise current-period balance sheet accounts.

AUTOMATED STATEMENTS General Ledger is the heart of the system. You must assign code numbers to each account to build the chart of accounts. These help generate financial statements quickly and automatically.

Reversing journal entries immediately reverse against the subsequent period when posted. Reversing entries in this system may not be used in the final period of the year—a time when reversing accruals are more likely to be required.

Accounts Payable answers many of the needs associated with the accounts payable accounting and payment process. By entering the vendor's federal ID number in a vendor's master record, the system will accumulate payments made and will produce the required 1099s. This module would be better if it warned when duplicate vendor invoices were encountered. Also, voucher injust speed might increase if Harmony allowed expense account numbers to be established in a vendor's master record, then allowed them to appear by default when the vendor was selected.

The payment process is aided by a Cash Needs report, which can be printed to the screen or printer. Specified invoices can be withheld from automatic payment until you choose to release them. After checks are prepared, they can be voided by rean-





Harmony, Version 2.0 Open Systems Inc. 6477 City West Pkwy. Eden Prairie, MN 55344 (800) 328-2276 (612) 829-0011

List Price: General Ledger, Accounts Receivable, Accounts Payable, \$599 each. Also

able, Accounts Payable, \$599 each. Also available: seven other modules; System Manager, \$99. Requires: 512K RAM; hard disk; condensed type or 132-column printer; DOS 2.1 or later.

In Short: Well-designed integrated accounting software with excellent documentation; allows window lookup and data buckup from within the system. Not copy protected. CIRCLE 808 ON IEADER SERVICE CAPO



Mitsubishi Diamond Scan™ The New Standard In Multi-Application Monitors.

Introducing Model AUM-1371A—The Single Solution Monitor Ideally Suited For Applications Ranging From Monochrome Text To Full-Color, High Resolution Graphics.

Introducing the newest, most versatile high resolution color monitor in the industry today—Mitsubishi's Diamond Scan (Model AUM-1371A).

Actually five monitors for the price of one, the Diamond Scan delivers everything you'll ever need in a multi-application monitor. Including full compatibility with the IBM® PGC/EGA/CGA/MDA and Monochrome Hercules graphics boards. And for even greater flexibility, the Diamond Scan also accepts NTSC video input.

Exceptional design characteristics allow for a resolution up to maximum 800 horizontal dots and maximum 560 vertical lines on a 13V" viewing area. What's more, Mitsubishi's

Diamond Scan incorporates proprietary auto-scan circuitry which automatically locks onto any horizontal frequency from 15.6KHz to 35.0KHz, and any vertical frequency from 45Hz to 75Hz.



Other advanced design features include a high resolution CRT with .31 dot pitch, automatic screen image adjustment. super-high contrast panel glass for improved visibility and Diamond Matte® coating for maximum glare reduction. All packaged in a compact, ergonomically styled plastic cabinet.

TTL Input D-9 Pin

Analog Input D-25 Pi Cable Assignmen and Signal Levels NTSC Video Input

Move up to Mitsubishi's Diamond Scan-the new standard in performance and versatility by which all others will be compared.

For additional information and the location of your nearest distributor, call Mitsubishi today at 1-800-556-1234, Ext. 54. In California, call 1-800-441-2345, Ext. 54. Mitsubishi Electronics America, Inc., Computer Peripherals Division, 991 Knox Street, Torrance, CA 90502.

NEW! Graphic Board Compatibility*

Quadram QuadEGA ProSync Orchid Turbo EGA/Turbo PGA Sigma Designs Color 400 Video 7 Vega-Deluxe ODP VIVA 640/800/1000 ☐ Paradise Auto SW EGA

STB EGA Multi Res Everex Micro Enhancer Hercules

IBM VGA, PGC, EGA, CGA AST Research AST-3G/Model 1 □ ATI Graphics Solution/EGA Wonder We've Got A Great Picture In-Store For You.



Diamond Scan is a trademark of Missababi Electrotrics. IBM is a registered trademark of International Business Machines Corp., Diamond Matrix is a registered trademark of Missabishi Electrics. Corp. © 1987 Missabab Electronics. America, Inc.

plying the check in reverse. This reinstates the invoice.

Accounts Receivable tells a lot about customers' habis, including who's bought the most, who's paid up and who's not, and who hasn't bought altely. A particularly good Accounts Receivable feature is a Cash Flow report that tells when you can expect money to come in. Used with the Accounts Receivable Cash Requirements report, this furnishes excellent manage-

ment information.

The Setup Assistant (a supplementary manual supplied with each module) contains an excellent description of the module's structure and requirements. It also explains some of the logic behind certain required decisions. On-screen context-sensitive help is also available whenever

you need it.

Open Systems markets Harmony as a "work processing" program that is easy to install, learn, and use. It is sensitive to user

needs and it makes good use of a function that allows on-screen inquiries of oftenneeded information

IRM Rusiness Adviser

-William H. Stewart

The IBM Business Advisor series, from IBM Corp., is a full-featured, fully inte-motion and the series of the system as a package; for \$1,145 you get the General Accounting Edition module, the Information Management Edition module, but installation, training, and 90-day support. The General Accounting Edition combines a general ledger with limited accounts payabilities. The series can be expanded with a series of the series of the compared with the series of the series of the compared with the series of the series o

Payroll Edition, Inventory Edition, and Order Entry Edition—available for \$995

IBM Business Adviser is distinguished by its integrated approach to data entry and by its use of terminology that simulates a manual system.

An install program handles the initial installation of the system, and you install the remaining modules by thoosing a command on the min menu. One drawback is the disk space it requires; you'll need a free modules. To back up the complete system in a reasonable amount of time, you'll need a tape backup or fast floppy disk backup utility like Corefust (see "Better Tools for Backup," PC Magazine, Volume S Number 33.

The IBM Business Adviser's General Accounting Edition module, which functions as a General Ledger, is enough for most needs. It can handle a 14-digit ac-

Big Blue introduced a new standard.

By now you've heard that Big Blue has introduced a new PC standard. Naturally, Amdek* is right on top of this technology.

Introducing our latest technical achievements—the Amdek 732 color and 432 monochrome monitors

Sharper, cleaner text. Richer, more vibrant color. Vertical refresh as high as 70 Hz. to eliminate flicker and maintain a crisp, steady image. An anti-glare screen that reduces eye fatigue. And a tilt/swivel stand that prevents neck strain.

The 732 allows you to choose from a palette of over 256,000 colors. And the text switch delivers clear single color text for a range processing.

text for word processing.



On-line, contextsensitive help is available in IBM Business Adviser. Entries can be made from this screen directly to general ledger, accounts payable, and accounts receivable journals.

count number, which can be split into division, main, and department. Alternatively, you can use a predefined chart of accounts. The program can maintain memo accounts for nonfinancial data. You

also can set up to 53 open accounting periods in a year, which gives you a lot of flexibility in setting up the accounting cycle that is most advantageous for the bookkeeping needs of your company.

FIXED-FORMAT REPORTS 18M Business Advisers any produce simple automatic balance sheets, income statements, and trial balance reports in any of 23 pre-defined columnar formats that compare actual, budget, and historical balances with percent or dollar-value variance calculations. The formats are extensive but are fixed, so they will not suit all basinesses. A limited report which included in the Central Accounting Edition module produce customated financial statements and descent continuous for grouping or selecting specific subsect of the chart of accounts.

General Accounting Edition lets you build accounts receivable, accounts payable, and payroll subledgers. You also can print balance-forward accounts receivable statements, plus accounts payable and payroll checks based on input data at the time of check preparation. However, the amount of data maintained on the custom-

We can top that!

For the ultimate in monochrome, the 432 features a large 14-inch, flat-surface screen that actually displays larger type for easier viewing.

And because the Amdek 732 and 432 are compatible with IBM*s new Personal System/2" Video Graphics Array (VGA) and MultiColor Graphics Array (MCGA), the image of all your programs will look better than you've ever imagined.

At Amdek, we weren't content with just meeting the new standard.

Our goal was to exceed it!





1901 Zanker Road, San Jose, CA 95112 Phone: 800/PC-AMDEK FAX: 408/436-8187 CIRCLE 102 ON READER SERVICE CARD





P.O. Box 720576 Atlanta, GA 30358-2576 (800) 426-2266 List Price: Solution package (General Ac-

counting Edition module; Information Man agement Edition module; installation, initial training, and 90-day support by an authorized IBM dealer), \$1,745. Also available: General Accounting Edition module, six oth er modules, \$995 each; Network Extension

Edition module, \$245 Requires: 384K RAM (512K RAM recommended for Order Entry, Inventory Control, and Information Management Edition modules): hard disk: DOS 2.0 or later. Network version: 640K RAM; IBM's PC Local Area Network Program of NETBIOS-compatible program: DOS 3.2 or later

In Short: A full-featured, well-controlled, integrated accounting system that's sold and supported by IBM. Suitable for many small to medium-sized businesses. Copy protected CIFICLE 671 ON READER SERVICE CARD

er, vendor, or employee is limited, and if you require aging, automatic check preparation, or automatic payroll deductions calculation, you must add the specific module required.

The Accounts Payable Edition module works on a voucher basis and includes the facility to create automatic vouchers. You can use a " command to have an appropriate table shown on the screen. The program can maintain multiple discount terms. The system also can print vendor labels and index cards and can accommodate multiple bank accounts.

The Accounts Receivable Edition module can handle a combination of balanceforward and open-item accounts. It can also maintain revolving accounts with fixed payments each month, and it deals well with finance charges.

The menus can be tedious to work through once you understand the system. When you've completed a particular task. you are often left at the main menu. If you wish to do a similar task, you must work back through the menus. After you select an operation, the program has to be loaded for that particular function, causing a 2- to 15-second delay.

The written documentation is not extensive, but the initial setup instructions are clear and to the point. The documentation is supplemented with extensive contextsensitive help, a built-in on-line reference capability, and a tutorial.

IBM Business Adviser meets most of the needs of small to medium-sized businesses, but it requires a lot of disk space and is not particularly quick or responsive. Its built-in report writer is limited. IBM backing may outweigh the program's faults in the perception of some people, but the high cost should make them think twice.-Brent V. Shirley

Income II

Income II. a \$200-per-module program from MC Software, can handle up to 100 separate companies.

Installation is troublesome. MC Software recommends that your dealer install the program, and that's a good idea. Install it yourself, and you invite irritation. Income II gives you no screen instructions. and subdirectories are not automatically set up. During installation you must specify the terminal you are using from a 26item menu. Enter the wrong one, and you get an error message that is not explained in the manual. Installation also requires you to enter a number of values for screen control, such as Clear Screen and direct cursor positioning. Phone assistance is available and recommended.

As you set up the chart of accounts, all | module offers 100 unique passwords.

"GyPless mater the current date.
"GyPless"
"GyPless"
"GyPless"

COPYRIGHT (C) 1985 BY MC SOFTMARE, INC.
INCOME (+) INTEGRATES COMPANY HARAGEMENT ACCOUNTING SERVER Use S. 4.

40+85-86-87 Accounts Payable Accounts Receivable

Inventory Control Order Entre Terminal Coefficeration

Select Company General System Festores Set Pastword Step Program

COMPANY WATER NOT SET der fater uncaran number das irad

4(4_

FILE



MC Software Inc. P.O. Box 1377 Davis CA 95617 (800) 756-8104 (916) 756-8104

List Price: General Ledger, Accounts Payable, Accounts Receivable, \$695 each, Also available: five other modules: multiuser version.

Maintenance contract, \$200 per module per year: telephone support, \$300 Requires: 512K RAM: hard disk; condensed type or 132-column printer; DOS 2.0 or later. In Short: A powerful program designed for use in big companies with many departments

and accounts. Tough to install, however, and the documentation isn't much help. Not copy CIRCLE MAS ON READER SERVICE CARD

accounts are assigned a number, a letter denoting type (A = Assets, S = Sales, and so on), and a code. Department numbers are optional. The required code number identifies titles, detail accounts, and totals. It also sets up underlines (single and double) and line spaces to put your financial statements in the proper format. Assigned department numbers can be used to produce departmental income statements.

The various menus are confusing. The selections number as many as 22, and they do not use function keys. You can set up selective password control for each company and each journal by using the program's Password Access module. The

> Income II's screen has unusual prompts that clutter the screen and make it difficult to follow. It has no time display, which makes it difficult to control time-wastine procedures.



EZQueue 3000 . . . Peripheral Sharing Plus!

Giltronix EZQueue¹¹ allows from six to twenty-four computers to simultaneously share one or more laser printers, dot matrix printers, or plotters. In just a few minutes, you can configure EZQueue to efficiently manage a single shared printer or multiple printers depending on your need. Ten simple to use and expandable models are offered,

each with up to two

megabytes of dynamic buffering.



Increased Productivity

EZQueue goes beyond the cost advantages of sharing expensive printer resources. Files containing data for printing mailing labels can be directed through EZQueue to a dot matrix printer. At the same time, letter quality files can be directed to a laser printer containing the desired paper style. Accounting departments can share the various printer resources needed to print invoices or checks. The flexibility of EZQueue can enhance productivity and reduce total system cost in virtually any workgroup environment.

Dynamic Buffering for Simultaneous Inputs

Buffering is dynamically allocated to one or more printer queues allowing simultaneous input from each of the attached computers with no waiting. When a shared printer is busy, files are stacked up in EZQueue's buffer and output to the designated printer when it is ready to receive the next file. Multiple Printer Sharing

EZQueue is ideally suited to simultaneous access and share multiple printer resources. Each EZQueue is provided with Giltronic XC software, a DOS compatible program that makes selecting a desired printer a snap. Once installed on a computer, a few keystrokes will invoke CX from within any software program to quickly select the desired printer resource. Both serial and parallel interfaces are supported.

Simple Installation

No special cables are required because each EZQueue serial port automatically adjusts to signal directions. "Smart" ports and Giltronix toll-free tech support guarantee a successful installation with minimal effort.

Expandability

Unlike competitive systems, EZQueue's buffer size and number of ports can be expanded as your system grows. A minimum EZQueue starts with six serial ports, two parallel ports and 25% bytes of dynamic buffering. Serial ports can be added in six port increments up to a total of twenty-losural ports. Buffering can be added in 25% byte increments up to a total of 2 megabytes.

3780 Fabian Way Palo Alto, CA 94303 (415) 493-1300 Telex 345542



For more information call Giltronix toll-free at (800) 531-1300; in California, call (800) 521-1330.

CIRCLE 265 ON READER SERVICE CARD

■ ACCOUNTING

POOR DOCUMENTATION The docuinentation is confusing. Income II operates in the III of the III of the III of III of III III of III in a single loose-leaf manual. Sections are not well organized, and DOS users must sift through documentation on the other environments. That's time-consuming and annoying, given that the DOS world dwarfs the other two.

Open-credit memos in the Accounts Payable module can be automatically applied when payments are made or when you are handling recurring expenditures—such items as rent and notes. The module accommodates up to 997 expense categories. Overdue accounts are highlighted, and discount due dates are monitored. You can list up to 15 microes to be paid on a single check stub, and each company can have up to 32,000 vendors.

The Accounts Receivable module lets you manage each customer under openitem or balance-forward methods. It also gives you credit memos and recurring invoice processing and provides a detailed sales analysis of up to 1,000 sales accounts.

The General Ledger gives you an audit trail, 12-month budgeting, recurring journal entries, and the flexibility to design the format of financial statements. Out-of-balance journal entries are highlighted.

The General Ledger, Accounts Receivable, and Accounts Payable can operate as standalone modules or can be integrated with others. You can have as many as 32,000 records in one file. The program will output in formats that meet the requirements of preprinted forms from Deluxe Computer Forms.

The \$200-per-module price for support buys you maintenance and regular mailings of technical notes; hot line help on the series is \$300 more. MC Software suggests you first call your dealer when you need help and call directly if a dealer is not available.

Income II, with its confusing documentation, cluttered menus, and expensive support requires too much from—and gives too little to—the user. With its elaborate and convoluted menus, it would be more appropriately positioned in an art gallery than it would on an accountant's PC.—John Somoza The queen of the PROM has just graduated at the top of her class.

IRMA" has been the most reliable and most popular FC-to-mainframe link ever created. But as good a our IRMA is, we've never said we couldn't do better. Fact is, FROM is still a FROM. And you have better things to do with your time than spend it upgrading PROMs.

But now there's IRMA 2^m; it marks a whole new era in terminal emulation technology. IRMA 2 is software-loaded. So you can upgrade by Like Mod 5 support. And easy-to-use menus for quick custom-configurations. And keyboard-remapping and key programmability. And perhaps best of all, you gain speed.





All this new power of IRMA 2 is available right now for the IBM® PC™ XT™ and AT™ and the PS/2™ Model 30. And soon for all other PS/2 Models.

There's some especially good news for our current IRMA and Forte PJ customers, too. Because they can also take advantage of the new power of E78 Plus software. For not a lot of money.

For a limited time, you can get E78 Plus at a special

low conversion price. But you'll have to act soon. Contact your local DCA distributor for all the details of IRMA 2 and E78 Plus software. Or call 1-800-241-IRMA, Ext. 518. In Georgia, call 1-404-442-4500.





ATRIBUTE TO THE 24-PIN PRINTER

You're looking at all the printer you'll ever need. For any application you'll ever have.

- The Cittzen™ Tribute™ 224. A 24-pin dot matrix solution of fering superb word processing, spreadsheet, graphics and data processing applications. At a price you'll find surprisingly affordable.

cessing applications. At a price you'll migratify arrorated the Tribute 224 delivers true letter-quality printing at 66 cps, correspondence-quality at 132 cps, and drafts at 200 cps (at 10 cps). In standard or proportional spacing. And optional

IC cards enable fronts and emulations to be easily expanded, You also get high-resolution graphics. A built in, pushfeed, variable-width tractor and automatic paper loading system. Both serial and parallel interfaces for flexible hardware compatibility. Front panel access to most print functions. And compatibility with virtually every major software package.

All this, and it's backed by our nationwide service, excellent documentation, and 12-month warranty.

For more information, call 1-800-556-1234, Extension 34 In California, call 1-800-441-2345, Extension 34.

The Citizen Tribute 224.
There is no higher tribute to 24-pin printing.

Printers that run like clockwork.

CIRCLE 112 ON READER SERVICE CARD

Libra Accounting Software

Libra Programming has specialized in accounting applications for IBM environments since 1976. Its PC product, Libra Accounting Software, is a flexible, heavyduty package with a number of features and options.

Libra has flexible reporting features and good audit trails: it also lets you program its modules to fit your needs. But at \$1,950 per module, it is one of the most expensive programs reviewed here. Libra's error-handling and control features are weak, and the program limits access to master files during data entry. It also makes you remember a bost of ontions and abbreviated fields.

A brief tutorial with sample data helps you get started. Setup starts with the "Environment Diskettes," which define the system hardware and offer a program to customize menus. System security can be installed through the menus to restrict access to individual users and establish required user IDs. Each module (General Ledger, Accounts Payable, and Accounts Receivable) requires about 1 megabyte of storage.



84121 (800) 453-3827 (support) (801) 943-2084 (general) List Price: General Ledger, Accounts Re-ceivable, Accounts Payable, \$1,950 each. Also available: six other modules: multiuse

Requires: 256K RAM; 20 Mbyte hard disk: math coprocessor; condensed type or 204column printer: DOS 2.1 or later. In Short: A heavy-duty, flexible package

version.

with excellent audit trails and report selection. Poor error handling and weak controls in some areas. Not copy protected, but reires Key Code from dealer. CROLE BY ON READER SERVICE CARD

GL658221 frial Selence CP 8 178 8.5 X 11 Report Type Print Sabtetal lines Priot Set Income line States of conies Double spation Lises per inch Characters per Quality Print 14 Printer Pumper 14 Print Options and Defaults . Name a relection and press DETER 79 feetiess

Libra Accounting Software gives you a variety of options to print reports. You use this menu to print a general ledger trial balance

Manuals of several hundred pages accompany each module. They include worksheets and some useful tips on estimating file sizes. Completing the worksheets requires a knowledge of accounting, but Libra support is excellent. You can call the company's 800 number and have a representative walk you through the installation-a good idea, since the manuals contain inaccuracies.

Utility programs include file status reports and a spool facility; they also allow direct access to DOS BACKUP, RE-STORE, and FORMAT commands. The system remembers which of two alternating backup disks is next-in either the A: or B: drive-but it does not verify that the right disk has been inserted.

General Ledger first stores all transactions in one of nine transaction files, making it possible to separate batches or workstations. You specify which transaction file is to be posted.

You structure your own eight-digit account number. The chart of accounts can be copied for multiple-company operations, but Libra has no "ready-to-run" financial statements. You need to define those as part of the initial setup, and it's a time-consuming and complicated process. Once the statements have been defined, you can choose from more than 70 different style options that determine the time periods, comparison formats, and calculations to be used.

General Ledger, Accounts Receivable, and Accounts Payable have a series of runtime ontions (such as which company, the period-ending date) and program defaults (print zeros, number of copies, dollar

signs, and so on), which can be saved and recalled when printing reports.

Self-reversing entries must reverse within the same year, and you can enter budget numbers into each month of the year as 1/12 of an annual total. However, no monthly closines are required. Statements can be run at any time. Libra has no message feature to alert you if active accounts with balances are deleted; the books simply show up out of balance.

NEW RECEIVABLES Libra is producing a new version of its Accounts Receivable module, in which the screens and commands will resemble those in the Accounts Payable and General Ledger modules. In the present version, cash receipts on everything but prepaid items can be entered only for invoices already in the system. The Price File option keeps price. cost, tax, and other information for products, which can be called up by the data entry program. Billing and order entry are combined to interface. Reports are sorted by customer class and price codes that you define. Transactions can be easily edited. but once a transaction has been posted, you must make a new entry to change dollar amounts.

The Accounts Payable module requires a voucher number for each transaction. The system will accept duplicate invoice numbers but will not duplicate voucher numbers. It also handles job cost coding, encumbrances, and retention data

Libra is a comprehensive package, one that's suitable for many users if they are willing to pay the price for its features. -Claude Bartel

Macola Accounting Software

Comprehensive and well-designed, Macola Accounting Software is at the top of its the top of its class, offering a mix of features and flexibility not seen in most systems. As a descendant of MCBA's minicomputer software for accounting, distribution, and manufacturing, this mature system, solid by Macola for 5795 per module, incorporates feedback from more than 20,000 usphisiciated users over the past 15 years.

Both small and large businesses will benefit from the program's inherited features plus the company's enhancements for the micro version. Macola Accounting Software is written in Micro Focus CO-BOL, the IBM-standard COBOL for the new IBM (SV)

new IBM USV2.

We tested the software on a standalone IBM PC AT and on a Proteon network running Novell's Advanced NetWare1286.

Even with four users on the network, speed was not noticeably diminished. Installing the software on any system is as simple as copying each program disk into any directory. Macolar includes detailed instructions and DOS commands to create





Macola's entry screen for cash receipts lets you choose which invoices you want to pay at a given time.

directories, copy programs, and initialize data files.

DYNAMIC EXPANSION Some packages make you specify the expected number of records in each file during a lengthy file setup procedure. Macola alleviates this burden by dynamically increasing the file size as requirend.

Macola works with both on-line and batch processing. The ability to review the data before posting is critical to maintaining the integrity of the accounting data and climinates the need to post correcting entries frequently. When you need up-to-theminute data, as in inventory tracking, Macola does not require the posting step.

A convenient windowing facility lets you look up required master file data without exiting the data entry screen. Multiple levels of password protection and extensive audit trail reports protect your data. The menu-driven file recovery utilities restore the integrity of corrupted data.

Macola currently offers ten integrated modules, including a Report Writer. If you prefer, you can forgo buying the General Ledger module; each of the other accounting modules; provides a file of account numbers for account validation and prints detail distribution reports, which you may use to post a manual General Ledger.

The program supports up to 13 periods and a ten-character alphanumeric account structure divided into a main account number and a department number. You can print all reports and financial statements for an entire company, a single department, or a combination of denartments. Macola requires no month-end processing routines, and you may make entries for any past or future period at any time. This date and cutoff flexibility is critical to maintaining smooth monthly processing cycles.

The strength of Macola's Accounts Payable module is the fluid himococe entry options. Macola uses a voucher system whereby each invoice is assigned an internal voucher number. The voucher typesa are regular invoice, carolic means, and entry typesa are regular invoice, carolic means, and continued invoice, cancellation voucher, and general lodger distribution adjustment. You can enter each voucher with a 30-character document of the control of the strength of the dealth general to dept distribution. Macola easily handles recurring supports cash accounts, maintains a complete check history for each cash account, and allows tocket reconciliation.

You may use the Accounts Receivable module alone or integrated with the Order Entry flavoicing module. The Order Entry module supports up to 9,999 "ship-to" addresses for each customer. Macola gives you a number of sales analysis reports that other packages usually make available only when you buy a separate sales analysis module. These reports list sales by customer, salesman, type, state, and territory, in both detail and summary forms of the product
To go from a single-user to a network environment, you simply add the package's multiuser run-time module. Macola's technical support, documentation, and customization assistance meet the high standards set by the software. The features, flexibitity, and ease of use of the

Introducing Logitech's **Publishing** Solution

LOGITECH \$179

with Publisher Software

Our Mouse and Publisher Software is the complete solution for people who want to produce great looking, attention getting documents without having to master a lot of complex commands and typographical jargon. It's easy to learn, fast to use, and it gets you the results you need right now.

Page Layout Made Easy You don't have to be a graphic designer to get professional quality results. Create and edit text right on the page. We offer design templates, automatic layout in 1-4 columns, automatic flow of text around graphics, and vertical and horizontal rulers to guide you.

Typography Made Easy Select from over 61 fonts representing 14 typefaces, in sizes suitable for headlines, subheads and text. We provide optimal line spacing automatically. You adjust for special effects.

Graphics Made Easy Use our ClipArt or create your own using LOGIPAINT, PC Paintbrush or MS Windows Paint software. You can shrink or expand your graphic images to fit. You can also modify, rotate or copy them.

To place a credit card order call our special toll-free number: 800-231-7717

Call toll-free in California:

E Logilech News

30 Day Money-Back Guarantee

3 Year Warranty CIRCLE 182 ON READER SERVICE CARD

800-552-8885 YES! I want to produce great looking documents now LOGITECH Publisher Package

w. Serial Mouse and Plus Software w. Bus Mouse and Plus Software Add \$6.50 for shapping and handling. California Total Enclosed S □ VISA □ MasterCard □ Check Enclosed

DEALER INOUIRIES WELCOM

In Europe: LOGITECH SA, Switzerland Tel: 41-21-879656 • Telex 458 217 Tech Ch In Italy: Algol-Logstech Spa 39-2-215-5622

ACCOUNTING

modules reviewed here are repeated in the other modules.

Macola Accounting Software is a Rexible, powerful system that is well suited to many different businesses with varying levels of accounting complexity. Managers of growing businesses will appreciate he ease of use and the benefits of Macola's basic features and reports, and they can be confident that their companies will not outgrow the software.—Susan Davis and Morris W. Stemp

M*A*S 90

M*A*5 90, the latest offering from State of the Art, is powerful, flexible, and relative by easy to use (see "M*A*5 90, Well Beyord the Accounting Basics," PC Magoine Accounting Basics, "PC Magoper module package is a little and the changing screens and handling some data retrieval are fairly speedly. The manufacture screen are fairly speedly. The manufacture scarch that prevents serious degradation in performance as files get larger.

For all its features, M*A*S 90 does not burden you with busy, confusing



```
MUDICE NUMBER: 8668189-18
 TOMER MUMBER: 80-CEMBER
                                     NME: Centres Electronics
  $500 ICE BATE: 12/31/97
                                      DALES TAX - STATE: CA CATY:
                                   TENES COOK: 81 net 38
SWLESPERSON: 8081 Saver Salesnes
PRINT INVOICED: N
  PPING METHOD: UPS BLUE
TOMER P.O. 8: 543654
        COMMENT: Appears on females & statement
                                                             MET INVOICE AND
                                                                                      25000.0
                                    7.425.66
                                                            25.898.84
          18,000.00
                                                                                    22,425.66
                                              68 BASS
         7,425.00
                            30 MII
                                                                                  120 MYS
            CUSTOMER'S CHEDIT LIMIT EXCESSES
TO SEE WANT TO ACCEPT THES INVOICET COME. IN
```

M*A*S 90 alerts you if an invoice is about to put a customer over his credit limit. Online access to information helps you decide whether or not to process the invoice.

screens—a problem with other comprehensive systems. Many functions are configured through setup screens, and the system brings up required fields during data entry only if needed. Parameter-driven reporting gives a broad range of useful management reports. However, M*A*5 90's relatively weak audit trail reporting may cause accountants to spend more time ana-

lyzing accounts than they should have to. M*A*5 90's on-line access to master and transaction file information makes data entry easier, the program allows you to browse and search, as well as retrieve account numbers, customers, vendors, and invoice numbers. You can set up vendors and customers on the fly during invoice entry, and you can move around the screen easily to dit transactions.

EASY INSTALLATION Installing M*A*S 90 is as easy as installing any simial asystem on the market. Files do not expand dynamically, but file maintenance is simple. Data entry screens tell you how much space is available in the file you're updating. Changing a table of required routs for control the files.

General Ledger gives you a good complement of the basic features available from most other packages on the market, but without much refinement. General Ledger accounts can be up to nine alphanumeric characters long, divided into a maximum of three segments—one of which you can designate for departments for profit center reporting. While the system does not come with predefined charts of accounts, you can create one and copy it, as well as report formats to new company databases. M*4*5 90 assigns budgets and prior-period balances to accounts for each period. It can automatically spread the first-period budget to the other periods.

M*A*5 90 offers automatic reversals. You can set up recurring transactions, but the program gives you little control over whether they are run at the right time. Entries must be in balance, but M*A*5 90 makes no provision to hold incomplete or

out-of-balance batches.

Updating transactions requires many printing and updating steps. You can conveniently post to a future period or fiscal year, but posting to prior periods takes a great deal of effort. The closing procedure prompts for the printing of required reports

before the period is closed.

The General Ledger report formatter is capable but difficult. You can combine separate companies with dissimilar charts of accounts, but the companies must use the same fiscal year.

Accounts Payable and particularly Accounts Receivable are distinguished by excellent functionality, good data-entry features, and flexible handling of different transaction types. Both offer exceptional parameter-driven management reports.

Accounts Payable allows discounts earned or lost (many systems handle only discounts earned), 1099 forms printing, retention of monthly check register detail, and integration with the Check Reconciliation and Job Cost modules. You can set up Accounts Receivable to print invoices that

Get Your Hands On More Solutions

LOGITECH \$ with Plus Software \$119



Purchase our best selling LOGITECH Serial or Bus Mouse and Plus Package with CADD, Paint and Publisher

software at very affordable prices. Each package is a complete solution that gets you the results you need right now.

CADD Solution

Our Mouse, Plus Software and LOGICADD (Generic CADD 3.0 plus DotPlot). Everything you need to turn your PC into a full featured CADD workstation. It's the complete solution for dimensioned line drawing and CADD.



Paint Solution

\$149

Our Mouse, Plus Software and LOGIPAINT (PC Paintbrush). With 11 type fonts and a 16 color palette, it's the paint set that's used by professional and beginning users alike, LOGIPAINT files move easily into both LOGICADD and Publisher documents.



Publishing Solution

Our Mouse, Plus Software and PUBLISHER Software (PFS: First Publisher). It's the complete package that makes it easy to produce high-impact, professional looking documents.

To place a credit card order call our special toll-free number:

800-231-7717 Call toll-free in California: 800-552-8885

YES! I want the LOGITECH Mouse solution
LOGICADD Package \$18 W. Sersal Mouse and Plus Software w. Bus Mouse and Plus Software
LOGIPAINT Package \$14 w. Serial Mouse and Plus Software w. Bus Mouse and Plus Software
PUBLISHER Package \$17 w. Serial Mouse and Plus Software w. Bus Mouse and Plus Software
Add \$6.50 for shapping and handling. Californ residents add applicable sales tay. Prices valid in U.S. only
VISA MasterCard Check Enclose

VISA Masteri	Card Check Enclose
Card Number	Experim in D
Segnature	
Name	
Address	
City	State
Zip	Phone

LOGITECH SA, Switzerland Tel: 41-21-879656 • Teles 458 217 Tech Ch

ne Software PC Paintbrush is a trademark of ZSoft Corp. PFS. First Publisher is a trademark of

■ ACCOUNTING

can reference sales codes. Sales codes offer some features available only with an Inventory module in other systems.

M*A*5 90 does not have on-line help, with the documentation is excellent, with useful lips for new users. Password maintenance offers security at four levels. The runa any module, also contains an easy-tense Report Master, which can access data from any file and produce custom-written reports. Since the module lext you print reports to the screen, the printer, or a disk, productivity took like dBASE III, Lotus's data. In addition, State of the Art plans to release a Data Import module.

Overall, M*A*S 90 is well suited to handling the accounting functions of small to medium-sized businesses. —Jeffrey Cohen

MCBA Business Software

Formerly called MiniComputer Business Applications, MCBA, the maker of MCBA Business Software, was one of the original pineness in packaging accounting, distribution, and manufacturing software for microcomputers. Today a base of 22,000 users num MCBA's software on hardware ranging from micros to superminis, including MCBA, a versatile, menu-driven accounting package sold by value-added resellers for \$750 to \$1,200 per module.

MCBA is the basis of two other major PC accounting packages: Macola Arcounting Software and RealWorld Accounting Software and RealWorld Acreviewed here. While MCBA retained the rights to market the microcomputer version, it permitted Macola and RealWorld to use the code for microcomputers for a limited time. Although the three systems began with the same COBOL-based code, they each have evolved different features and socialities.

MCBA is designed for small to medium-sized businesses. Its flexible General Ledger module uses a five-and-five account structure, with up to five alphanumeric characters for the prime account and

MAGNET EXCESSES CUSTOMER'S REMAINING CREDIT - IS THIS OF 7 M

MCBA Business Software tracks customer balances and lets you know if they are beyond their credit limits. This can help you manage your cash flow.

up to five alphanumeric characters for the subaccount. It supports 12 or 13 user-defined accounting periods and permits adjustments to prior and future periods MCBA tracks General Ledger transactions by source, maintains balances for the current and prior year with budged amounts for each month, and performs a complete vear-end orocculum.

MCBA's Accounts Payable features include entry and editing of vendor invoices manual and partial payment of vouchers, cash requirements reporting, on-line inquiry into all vendor activity, check and 1099 forms printing, and a check reconciliation function. The package also allows you to enter recurring invoices into the system as transactions at any time during the month.

FLEXIBLE INVOICING The program offers five ways to select invoices for payment. You can select all open invoices for payment. You can select all open invoices and invoices the within a specific date range, earlier invoices for discount, all open invoices leighble for discount, all open invoices for a particular wendor, or only specified invoices. In addition, you can make partial apyments, cancel vouchers, and there invoices for payment. You can and defer invoices for payment. You can

The report subsystem allows you to view a spooled report on the screen and to print and delete reports. It will print any number of copies on any printer and offers protection against unauthorized access to reports.

Accounts Receivable closely mirrors the Accounts Payable module, making the system easier to learn. Setting up both modules is easy. For both, you specify account numbers to which the transactions generated in the module will be posted—for example, for Accounts Receivable control account(s), finance charges, or miscellaneous charges.

Using MCBA's versatile Cash Receipts processing function, you can enter all relevant information about checks received from your customers and specify which unpaid transactions should be paid. You can record in complete detail the General Ledger distributions that result from Accounts Receivable processing, including distributions of sales to multiple sales accounts.



(818) 242-9600 List Price: General Ledger, Accounts Payable, Accounts Receivable, \$750 to \$1,200 each (prices vary according to dealer and amount of training and support offered. Also resibility multipage.

able, \$750 to \$1,200 each (prices vary according to dealer and amount of training and support offered). Also available: maltisser version. Requires: 256K RAM; hard disk; condenser type or 132-column printer; DOS 2.1 or later 15 Short A semantic most driven control.

type or 132-column printer, DOS 2.1 or Inter. In Short: A versatile menu-driven accounting package suitable for small to mediumsized businesses; runs on hardware ranging from microcomputers to superminis. Not copy protected.

CRICE BEOM READER SERVEE CARD

PC MAGAZINE SEPTEMBER 15, 1987



BM just announced their new

redesigned "standard" keyboard for personal computers. There's only one problem: it won't work on your IBM computer if it was purchased prior to June 1986 or on any PC compatible purchased at any timel Not to worry. Our new Turbo-101 Enhanced Keyboard gives you the layout and enhancements of the IBM with some logical improvements (see above photo). And it works on your existing PC, XT. AT. PCir. AT&T, Epson and virtually all compatibles!

Get Borland's Turbo Lightning ~ For FREE!

To really turbocharge

your productivity, we are including, free-of-charge, Borland's red-hot Turbo Lightning software with each keyboard. Now. when using SideKick, WordPerfect, Microsoft Word, 1-2-3 or most popular programs. our Turbo-101 Keyboard will check your spelling as you type, gives you instant access to Random House's 80,000-word Concise Dictionary and 60,000-word

Thesaurus and much, much more! "Lightning's good enough to make programmers and users cheer, executives of other software companies weep," says Ilm Seymour of PC Week. Sold separately. Turbo Lightning retails for \$99.951

The Only Alternative

7650 Haskell Avenue Van Nuys, California 91406 (818) 780-1673 Turbo 151 is a trademark of DateDesk International Turbo Lightning is a trademark of Borland International 18M and 18M AT are regulated trade-marks of International Business Machines, Inc. DEALERS CIRCLE 140 ON READER SERVICE CARD END USERS CIRCLE 141 ON READER SERVICE CARD

For users of spreadsheets like 1-2-3, the Turbo-101's separate cursor controls and numeric keypad makes entering numeric

data into cells and moving from cell to cell as natural as moving your fingers. And for word-processing, the 'Selectric' typewriter layout makes the Turbo-101 as easy to use as a pencil; and with the extra large Enter, Shift & Control Keys, you'll make so few mistakes, you won't even need an

SPECIAL OFFER!

KEYBOARD & SOFTWARE ludes 30-day money back arantee and 2 year full warranty. To prove that we don't ignore you or your pocketbook, you get our Turbo-101 Enhanced Keyboard and Borland's Turbo Lightning for an tounding \$149.95." No, you didn't read it wrong. During this amazing

Introductory Offer you get both keyboard and software for less then most software programs by themselves! Now, if you're still feeling ignored, you can always do what you know wh wants you to do.. and buy a new computer to get their

keyboardi credit card orders call (800) 826-5398

in CA call (800) 592-9602

Enter 4

the best kept secrets, but here's what's being said about our first end-user Keyboard/Borland tware bundle:

Who Can Pass Up a D Department. Talk abov tier brod World Mer 86 tres all of the pe werd try

iso for MAC.

MCBA offers some useful marketing and customer information. Accounts Receivable analyzes period- and year-to-date sales and costs by salesman, customer, customer type, state, territory, and sales volume.

Besides the three basic accounting modules, MCBA offers five other modules, all fully integrated in the package: Customer Order Processing, Inventory Management, Purchase Order and Receiving, Payroll, and Bills of Materials Processing. Each module's source code follows advanced coding standards, using conventions that make maintenance easier. MCBA offers demonstration sets of each module, which include the complete, easy-to-follow user manual, demo programs, and sample data. All the MCBA modules are available only through valueadded resellers, who also provide installation, training, and support.

MCBA is comprehensive and versatile, as well as flexible and easy to use. The fact that MCBA can run on systems ranging from micros to superminis is another strong selling point, especially for companies that have a mixed hardware environment or plan to switch hardware systems.—Margaret Balochka.

Medallion Business Series

Timberline Software's Medallion Business Series is a powerful but easy-to-use integrated accounting system that can harmonic beautiful accounting system that can harmonic beautiful accounting system that can be suffered to the suffered sound accounting system that can be used in any business. But it takes a while to get started. Before you can use any of the accounting mobiles, which cost \$562 each, you must find the production device that the suffered sound sound the suffered sound sound to the suffered sound
When you enter a transaction in Medallion's General Ledger, you must specify which of the 99 user-defined journals contains the transaction. The program prints each journal's transactions with a distribution to the affected General Ledger ac-

CASHING IN ON THE NETWORKS

LANs and minicomputers represent a substantial investment, but they may save hiring a second shift.

Single-user accounting systems satisfy the needs of businesses, large or small, that have relatively few transactions. But as soon as the number of invoices, checks, and payroll entries exceeds the ability of one person to enter all the data, you face two choices; put on a second shift or switch over to a multiuser system.

Neither solution is perfect. Putting on a second shift is a stopgap measure with operational limitations. Work is fragmented, and the second shift can't call on anyone to resolve problems. On the other hand, installing a multiuser system is a long-term investment that adds complexity. Multiuser systems have un-front costs and create long-term increases in overhead, such as maintenance. For instance, the multiuser versions of the RealWorld Accounting System and Business Partner Accounting Software will cost you \$100 more per module than the single-user version. But they also have the potential to generate increases in productivity that you won't get from adding

a second shift. Multiuser accounting systems are available on local area networks and on minicomputers. Typically, the LAN alternative is lower in cost, partly because the PCs on the network probably represent a sunk cost and partly because everything associated with minicomputers, except terminals, seems to be priced higher than everything associated with PCs. Minicomputer manufacturers and programmers charge what the market will bear. Either the LAN or the mini alternative lets you share centralized printers. though with different levels of ease. Both alternatives also give you the security you want for your accounting data. though again with many different degrees of protection.

SOFTWARE FIRST The choice between minicomputer or LAN-based multiuser systems to support the accounting function is really secondary to choosing an accounting software package that fits your needs. Examine the functions, features, reports, and formats and identify desirable programs. Then, if you find you can use programs in both the LAN and minicomputer categories, make your decision on factors such as resource sharing and security.

LANs and minicomputers have different abilities to apportion printers and other peripherals among several users. A minicomputer's operating system allows programs running on the computer to send print jobs to a spool file. The operating system sends the spooled jobs to a shared printer. A LAN can be used in the same way, but only on a LAN any application run anywhere in the network can take advantage of shared devices. The applications program doesn't have to be networked or multiuser to use the shared printers, modems, plotters, or other devices on the LAN. The oldest copy of WordStar can drive the newest laser printer over a LAN. Because of this, in an organization with many PCs, a LANbased accounting system reduces the cost and increases the productivity of shared peripherals more than a minicomputer would

Multiuser operating systems, like those in LANs and minicomputers, must handle the contention of several people asking for the same record of the same file at the same time.

MS-DOS 3.1 introduced some elementary procedures for handling simultaneous requests, but minicomputer operating systems have more-sophisticated ways of dealing with them. In LANbased systems following the DOS 3.1 conventions, when one station writes to a record, all other stations are locked out for all other purposes, including reading. This means that if one station is finished writing, but the program still has the record locked, any reports being generated that need to read the locked record will either skip the record and give inaccurate results or abort the report task. Neither outcome is desirable. Some programs get around this DOS limitation by issuing repeated calls for the data, hoping that the record will become unlocked. Minicomputer operating systems mediate the competing demands of the program and at times may call for human assistance. As a matter of operational procedure, though, it's not wise to run reports when anyone is keying in data.

SECURITY LAN and minicomputer systems have similar security features. Softon systems relay primarily on passwords for program access. The LAN nettern of the program access are security restrictions are over and above the imitations created by the screens and means in the applications are over and above the limitations created by the screens and means in the applications program. The operating system restrictions are over and above the relation compact of the same treatment above of the system is self.

The network or minicomputer operating system can be used to give individuals levels of privileges such as read only, write only, modify only, create, or various combinations of these. For instance, a data entry clerk might be authorized by the operating system only to modify files. Even if the clerk uses the accounting program's means structure to try to read other files, they will remain the control of the

The floppy disk drives on microcomputers are another security hazard. If ac-

counting data can be read, it can be captured on disk and carried sway. As more people use the system, the danger of data being copied increases. Dumb terminals attached to minicomputers don't present this threat, but a PC used as a minicomputer terminal does. Diskless workstations for LANs, marketed by half a dozen companies including Novell and 3 Com, remove the danger of copying to disk from the LANs environment.

The physical security of the LAN and minicomputer-based systems varies. In many cases, the physical security of a LAN-based system is better than that of a minicomputer because of the removable media storage systems available for PCs. Removable hard disk drive cartridges and devices such as Iomega's Bernoulli Boxes allow megabytes of data to be removed and protected in a safe. Additionally, some network operating systems such as Novell's NetWare restrict access to the hard dlsk drive even to someone who gains physical access to the server. Technically, data can be destroyed without a password if physical access is gained, but the data cannot be read

gained, but the dust cannot be read.

Because files are more vulnerable to deliberate or accidental destruction in a multiuser system, making backups and storing them properly is extremely important. You can decide how often a backup is needed based on how many hours of work you are willing to lose, but be sure to store a reasonably current backup outside your organization's building. A single fite or flood shouldn't put all of your beclups at risk.

At some level of activity, all businesses will need to make a multiuser accounting system choice. Consider the program first, but if equivalent programs are available on both LAN and minicomputer systems, then cost factors will probably favor a LAN-based system.

Frank J. Derfler, Jr., is a contributing editor of PC Magazine.

-Frank J. Derfler, Jr.

counts, thereby providing an audit trail.

You can add new accounts, customers, and vendors while entering transactions in the General Ledger, Accounts Receivable, and Accounts Payable modules. In the General Ledger, new accounts are posted to a suspense account.

Accounts Receivable handles 13 types of transactions including credit and cash sales, returns, discounts and finance charges, and debit and credit adjustments. Accounts Payable can handle entering

purchases; printing checks and invoices, account status reports; making full, partial,

dedallion Business
Series is a powerful but
easy-to-use integrated
accounting system
that can handle a wide
variety of recordkeeping functions.

and direct payments; and voiding invoices and checks.

Error handling during data entry is cumbersome. If you discover an error immediately, you can void it using a special key. But an error in an earlier transaction in the General Ledger such as, for instance, a \$150 debit to cash that should have been \$1,500, is harder to correct and involves a time-consuming process with too many steps. In addition, a debit entry that should have been a credit requires arevesting entry to correct the error.

Medallion Business Series cannol displace on the screen all the transactions entered before the error, nor does it number transactions automatically in sequence. And when you resume entering transactions, the proofs at the bottom of the data entry screen do not reflect the earlier transactions entered.

Initially, you can select the Force Zero



And only Smart lets you create custom programs that actually jump between applications. So, for instance, a single keystroke can transform a worksheet into a 3-D pie chart, paste the chart into a document, and send the document via modem to the home office.

Send Uniting for record lock

Between Workstations

Every Smart application includes a fully automatic File or Record-Locking scheme for shared data. So right out of the box, Smart can be used either on a single user PC or on a LAN workstation.

There are even versions of Smart for multiuser UNIX* and XENIX* systems; all 100% file compatible with the DOS version of Smart.
Which, according to Information Week, makes Smart "the first to provide DOS LINIX I AN connector.

DOS-UNIX-LAN connectivity without sacrificing power and features.

Between Software Brands

Old software can be re-placed, but old data can't. So you'll be pleased to learn that Smart is fully compatible with files already created with programs like Lotus 1-2-3 and dBase III

Smart also reads and writes ASCII, SYLK, DIF, and DCA.

and D.C.A.

Oh by the way, there's something else Smart is perfectly compatible with: You. Fact is, nearly every top computing magazine has praised Smart for its ease of use, on-line help, extensive tutorials, and clearly written manuals.

But why not see for your

Just return the attached Just return the attached card, or call toll-free (800) 331-1763 (in Kansas, Alaska or Canada call (913) 492-3800) and we'll rush you a free Smart demo disk and information kit.



SmartWare



ACCOUNTING



Templates in Medallion Business Series can be used to produce customized financial statements. reports, and lists. The Accounts Payable template shown here displays all fields on a vendor record.

Proof option to prevent debit and credits | from being posted to the general ledger if they are not in balance. But if you select this desirable option and make an error during data entry, the program will not produce a hard copy listing of the transactions to help you discover the error. You must first balance debits and credits, perhaps with a plug figure. If you do not select the Force Zero Proof option, Medallion will produce a printout, helping you locate an error but introducing the possibility of posting a group of transactions that are out of balance.

To delete erroneous entries to customer or vendor accounts in the Accounts Receivable and Pavable modules, you must access the customer or vendor number directly and then delete each transaction individually.

REPORTING OPTIONS Medallion's General Ledger produces a standard income statement, balance sheet, and statement of changes in financial position. Screens preconfigured with fields such as column contents, width, headings, and account ranges facilitate the production of informative financial statements. You can have up to four columns of information on any financial statement that you make. Medallion uses 25 reporting periods, ranging from current activity to year-to-date budget variances, and it assigns each one

You can produce customized financial statements, reports, and lists using a template. You can also use templates to preenter the same information on different records and to locate all the records in a file that have a specific value for a field. The screen image above shows a template from the Accounts Payable module in action.

an individual code number.

The Medallion Business Series documentation is divided into two distinct parts: daily operations, which includes a step-bystep guide for the day-to-day use of the program; and setup, which presents a detailed description of how to set up the master file for each separate module.

Medallion's instructions and illustrations ensure that you're up and running quickly, and that's an important advantage. But the required initial activation codes and difficulties in entering data, especially correcting the inevitable errors, are weak points in an otherwise fine program.-Harold C. Gellis

MICA Accounting Series

The MICA Accounting Series, a series of ten easy-to-install modules from Micro Associates, produces all the basic reports for a small business in a short time. Besides the General Ledger, Accounts Pavable, and Accounts Receivable modules, which sell for \$495 each, the series includes Inventory Control, Job Cost, Sales Invoicing, and Payroll. The outlay required to use the MICA Accounting Series (you'll need at least three or four modules) puts it into the high-priced category, with ease of use but without high-end features and options.

Micro Associates, which has been in business since 1981, has 15,000 applications in the field. Its attempts to make the MICA Accounting Series easy on the new user have paid off. The program menus are descriptive and the entry screens intuitive. Although the manuals do not have indexes, it's easy to find pertinent information.

The installation instructions are handy: they're in the floppy disk packet, saving you from having to consult the user manuals. Each module has a small program that automatically installs the files on your disks. The modules do not have a tutorial





Port Arthur, TX 77640 (400) 083-2051 List Price: General Ledger, Accounts Receiv-

able, Accounts Payable, \$495 each. Also available: four other modules; Productivity Interface, Applications Manager, \$295 each;

Network Manager, \$695. Requires: 256K RAM; two disk drives; con-

densed type or 132-column printer; DOS 3.1 In Short: Expensive and limited but both

easy to install and operate for novice users in small to medium-sized businesses. Not copy protected. CIRCLE MAKION READER SERVICE CARD





When Torrington developed the exclusive Manager Mause track-

ing mechanism with its patented suspension, the abjective was to create a reliable design which eliminates the maintenance problems

inherent in the conventional ball mouse. The result is a simple two-wheel, direct-drive system. Our tough, hard-

urethane wheels actually push dirt and debris away as they track mouse motion. Our

suspension keeps the wheels tracking smoothly on any flat surface, at any angle. This adds up to Manager Mouse Performance, smooth,

consistent, reliable, trouble free.

CORDIESS

CONVENIENCE

Now the Manager Mause family has a ew leader: Manager Mouse Cordless! PC Magazine says, "... (the) light-beam tronsmission

scheme is amazgly accurate, and the reedom it affords is wonderful." Camputer Graphics Taday calls it "the hottest new mouse on the

block." You will be amazed at how convenient it to use. Manager Mouse Cordles operates up to 10 MOUSE M hours on a single charge, and it works

effectively within four feet of its receiver, which mounts conveniently on any IBM PC or compatible.

GOING THE DISTANCE

In a 100-mile test pitting Manager Mouse against its two leading competitors, our exclusive tracking system design went the distance without any maintenance. Mouse "M" required disassembly and cleaning at 40 miles and every five miles thereafter. Mouse "L" failed before the five-mile mark. Complete test data is available from The Torrington Company.



TORRINGTON. Part of worldwide Inger # 6-Fig.

The Torrington Compary
59 Field Street, Torrington, CT of CIRCLE 181 ON

MANAGER

CORDLESS

Far a Manager Mause dealer ner call: 800-654-5449 (800-225-7219 in CT) or 203-482-9511, Telex 962494





This screen shows the flexibility that MICA Accounting Series has built into selecting customers to include in the Accounts Receivable aging report.

or on-line help, but Micro Associates' customer support personnel are prompt and knowledgeable.

COORDINATED UNIT All the modules work as a coordinated unit. Their setup, menus, data entry, report designation, and periodic closeout methods are similar. Their batch processing and review of transactions before posting are effective tools for the first-time user.

ICA produces all the basic reports for a small business in a short time.

General Ledger uses a six-digit chart of accounts, and you can use the last two numbers for department numbers. Setup is simple because the fixed financial statement formatting does not rely heavily on the chart of accounts. The setup and edit screens provide for a full year's account balance history, as well as the current-month and year-to-date budget.

You can enter transactions in the General Ledger system directly, as journal entries, or indirectly from other modules. MICA can make journal entries to past and future periods, and the number of line

items allowed is adequate. The program asks if the amount is a debit or a credit, and it computes and enters the final amount of the entry when you press the dollar sign in place of debit or credit.

Setting up the MICA Accounts Payable and Receivable modules is similar to setting up the General Ledger module. Both the Accounts Payable and the Accounts Counts Payable and the Accounts Payable and the Accounts Office of the United States of the William States of

The Accounts Psyable and Receivable modules interface with the General Lodger through a code number/general lodger account number conscriptions that the maintained in each of the modules. Thus you do not use the general ledger account number in data entry; rather, you use the code number designated in each of the modules. You have the option of having a code number designated in each of the modules. You have the option of having the code number designated in each of the modules. You have the option of having the code number designated in each of the modules. You have the option of having the code number of the cod

While the ease of setting up the General Ledger is an advantage, it is also one of MfCA's main drawbacks. The easy setup is accomplished by having only six digitor for account numbers and fixed financial statement formats. The only way to get different financial reports is to export the data files to a spreadsheet or similar program. Micro Associates sells a \$295 brougam for

exporting data.

The main drawback to the Accounts
Receivable program is that it allows only

one sales distribution for each invoice. To get around this limitation, Micro Associates offers a Sales Invoicing module, which also lists for \$495.

which also lists for \$495.

The MICA Accounting Series is limited in other ways, too. If you make a mistake, you have to retyle the eritire data line. In addition, the package allows spaces and banks in IZP Locks, fails to capitalize the two-letter state codes aroundately, the anadist hat vendor and customer codes include numbers only, uses inconsistent phone number formats, and allows the deletion of an account with a balance in the General Ledger.

While the MICA Accounting Series is easy to set up, works well, and has good customer support, the programs are limied by significant drawbacks that make them seem antiquated. And the high price Micro Associates is charging for a novice's level of accounting support puts MICA in the overpriced, you-can-do-better category—Oliver L. Wright

Micro Business Applications Accounting Software

Micro Business Applications Accounting Software, From the company of the same name, is a comprehensive set of 15 interpreted accounting modules, each selling for \$595. Micro Business Applications, the which has been in business since 1981, has sold in excess of 30,000 applications, In addition to the standard General Ledger, Accounts Receivable modules, the company's package includes 12 more modules—most notably, a relational database.

System installation, required only when you install the first module, is simple. Each module is set up in a consistent manner, and the process is men divention. One main menu calls all the modules, which function similarly. You enter transactions in batches that include the month terransaction should be posted to in the General Ledger. The next step is posting to the subsidiary ledgers, such as Acceptance Receivable and Payable, then posting to the General Ledger. Micro Business gives

From 360K to 70MB, we've still got your number.

Exert Now Prices



computing just got even better. We've added more standard features while low ering our prices* even further. Starting at an incredible \$850, our XT-compatible workstations now come with a standard dual video adapter and a serial port. In our line of AT-compatibles there is a choice of five models, starting at a low \$1,899. And all come with additional standard features such as a powerful IMB of main memory a serial port and a parallel port. And at prices that are consistently around 40% less than our major competitors. But a low price doesn't mean you have

The best value in personal

to sacrifice quality. Tundon personal computers are brought to you by a trusted manufacturer who has been an industry leader for over a decade. For the Tandon dealer nearest you call toll-free 1-800-556-1234 ext. 171. In California call 1-800-4412-345 ext. 171. Tandon Personal computers. With selection and price, we've still got

Loorspromote and filterature and product reviews.

Time

Touries

Constant

Price. Selection. Quality.

COOL, QUIET POWER

SILENCER 150



- PC/XT competible
- 155 watts of power
- system runs 5°-20° cooler
- · 64% noise reduction
- \$149

TURBO-COOL 150



- PERFECT UPGRADE PC/XT competible
- 155 wetts of power . system runs 25°-40° cooler
- 50% noise reduction \$149

TURBO-COOL 200



- PC/XT compatible . 200 wetts of power system runs 30°-45° cooler
- stendard noise level
 - \$189

EXPANSION CARDS TEMPERATURE TEST



Ordinary XT

38

Ordinary XT

NOISE LEVELS

db(A) @ 1m 2. The quietest hard drive = 38db

TURBO-COOL AND SILENCER POWER SUPPLIES INCLUDE THESE IMPORTANT FEATURES:

- direct replecement · full rated power
- FCC/UL approved
- · 4 drive connectors · heavy duty components . OV. OC. SC protection
- · patented twin fan slope-nose design for max, eirflow vs noise (PC/XT)
 - · high efficiency cooling fan with edjustable speed control (AT)
 - strict quality control backed by our immediate repiscement 1 yr, warranty

SILENCER 200



ULTRA QUIET

\$169

- AT competible · 200 wetts of power adjustable cooling (1.0X-1.3X) • 69% noise reduction @ 1.0X

TURBO-COOL 225



- PERFORMANCE
- AT competible · 225 wetts of power
- adjustable cooling (1.3X-1.6X) . system runs up to 30° cooler
 - \$179

ALSO AVAILABLE



- TURBO-COOL PC/XT/AT ADD-ON COOLING FANS
- · system runs 15°-30° cooler
- · improves reliability & longevity · quiet operation
- · quick, easy instellation Turbo-Cool PC/XT Turbo-Cool AT

\$69,95 \$79.95

100%

50%

25%

PC COOLING SYSTEMS 31510 Mountsin Wey, Bonsell, CA 92003 (619) 723-9513

Quantity 1 prices listed VISA/MC/COD/PO

ACCOUNTING



With current, prioryear, budget, and memo accounts. Micro Business Applications Accounting Software has extensive reporting capabilities. This screen shows the data entry for these accounts.

the General Ledger setup, you can tag each account as subject or not subject to summarization by posting source. Also, in all

REPORTING CAPABILITIES The Micro Business General Ledger can maintain up to four records for each account: current year, prior year, budget, and memo. These records enable you to compare actual current- and prior-year monthly with year-todate information, current-year budget with actual on a monthly basis, and statistical information with actual or budget. The four types of accounts and the report writer give Micro Business its strong reporting capabilities

you both control over which batches are

posted and good audit trails.

How much detail the General Ledger and other modules maintain is flexible. In the modules you can tag an account for detail or summary posting to the General Ledger.

The Accounts Receivable module can prepare detailed invoices with general ledger distribution by line item. It can also extend the price of items on the basis of the number of units shipped or another predetermined amount. The customer master record shows total monthly sales for the current and prior year. Unfortunately, the Accounts Receivable module does not automatically compute and account for cash discounts, and you cannot print an invoice more than once unless you reenter the invoice information.

The Accounts Payable module has a good 1099 reporting capability and a check reconciliation feature. General Ledger account designation can be by line item, and each line can have a distinct comment that appears in the General Ledger. Both the Accounts Payable and the Accounts Receivable modules come with standard invoice- and check-printing formats, but you cannot change them without customization from the company.

CUMBERSOME DATA ENTRY Entering data is cumbersome in all of the modules. Micro Business does not fully implement all the normal IBM cursor keys. In many cases, the Return key does not move the cursor to the next field; instead, it signifies the end of entering data on a screen. Many of the screens require three keystrokes to move on to the next screen. Furthermore, most operations and reports require a date, and the default date is the system date. Continually changing the dates becomes annoving.

Ease of use is enhanced by on-disk tutorials, and the manuals are well organized and comprehensive, with extensive use of screen illustrations. The Micro Business Applications customer support personnel

are prompt, courteous, and knowledgeable On the downside is the package's lack

of on-line help, cumbersome keystrokes, failure to fully implement IBM cursor movement, and inability to handle cash discounts automatically in the Accounts Receivable module. On the up side is the structure of the General Ledger and the report writer it includes, the ability to interface the data files with outside programs. and the additional relational database module. Micro Business Applications Accounting Software is suited to the knowledgeable business manager who wants an integrated system with all the important modules and unusually flexible reporting capabilities.-Oliver L. Wright

MVP (Most Valuable Partner)

MVP (Most Valuable Partner), a \$495per-module accounting program from Cascade Software, gives its users a friendly and colorful menu, cursor-sensitive online help, search functions, screen swapping, and a slick translate facility.

Applications installation is menu driven and easy. If there are less than five buffers and ten files in your CONFIG.SYS, you need to edit it to include those minimum numbers. The MVP installation parameter screen prompts you through installation. As you tell the system the name of your company, it creates its own directories and subdirectories.

After installation, you must check your AUTOEXEC.BAT file to make sure it contains PATH=C:\MVP and SET DIC-TIONARY=C:\(Company Name)\ MVP.DBF. If these commands do not exist, you must add them.

General Ledger has a very good ac-



23 Wood Lake Dr. Burnsville, MI 55337 (612) 894-3470 List Price: General Ledger, Accounts Re-ceivable, Accounts Payable, \$595 each. Also available: 12 other modules; multiuser ver-

Requires: 128K RAM; DOS 2.0 or later. In Short: A comprehensive, integrated set of modules with extensive reporting capabilities. Excellent report writer in the General Ledger, but cumbersome data entry. Not copy protected E 884 ON READER SERVICE CARD



MVP (Most Valuable Partner) has a variety of colorful viewing screens to display journal entries, current accounting balances, and activity of any account for any fiscal period.

count coding structure. There is a Cursatan Maintenance routine that gives a stanta Maintenance routine that gives the flexibility to define account number with up to 20 characters (15 digis sand 5 separation). The General Ledger journal orthy serion is easy to use. You simply indirectly one of the contraction of the critery sow will make. You can add, delete, odit, post, and print journal entries. But there system does not handle recurring position gives routine to the contraction of the critery of the contraction of the critery sow will make. You can add, delete, odit, post, and print journal entries. But the system does not handle recurring position gives routine to the contraction of
MVP comes with a detail and summary balance sheet, income statement, prioryear comparison, and year-to-date budget comparison. General Ledger accounts are organized into levels, with Level 1 for posting amounts and Levels 2 through 5 for organization and totals that are automatically calculated after postine amount to the first level. There is no General Ledger report writer. There is a translate facility to pull data out of an MVP file and put it into other formats, including spreadsheets, databases and word processors.

STANDARD VOUCHER ENTRY Accounts Payable gives you the standard voucher entry and edit, as well as selection of vouchers for payment by invoice number, invoice date, or due date. It allows inanual entries and lets you void checks. The vendor master file has a comment line, a calculated average float, and a refernce field that stores your account number

with the vendor and the vendor's payment

terms. The search function allows you to key in part of a wendor's ID, a voncher numin part of a wendor's ID, a voncher numits of all the possibilities appears on the screen. There is also a swapping function that lets you leave not eduate-nity screen by pressing Alk-F6 to go to another and then that you haven't already set up the vendor. There is also a check reconciliation function and a number of predefined reports intheir allow and the property of
MVP's Accounts Receivable module is called "The Billing System." It includes order entry, invoicing, each applications, deposit reporting, sales analysis, and stafement generation. Customers may be set up on an open-stem or balance forward basis, and you can define whether a customer is to be charged late fees, given discounts for any payment, or be sent a statement. You may set up product IDs or talses orders. This is not a full inventory system with

VP is a solid, midpriced product that is user friendly. If you're willing to create some reports in your favorite spreadsheet, it may be for you.

multiple-costing quantity on hand, but it is a useful reference for persons who sell on a standard cost basis. Using these product IDs, sales orders can be cut and General Ledger entries will be created to update the income and Accounts Receivable accounts, as well as the Inventory and Cost of Sales accounts.

The Billing System also has several output options. You can print invoices, statements, and a number of reports including order confirmations, aging schedules, open invoices, deposits, sales analysis, and a sales tax summary report.

MVP's documentation is accurate, but it lacks detailed examples, data entry forms and operations schedules, and checklists. It has no tutorial, but sample company data files are supplied. Telephone support is available to registered us-

MVP is a solid, midpriced product that is user friendly. If you're willing to create some reports in your favorite spreadsheet, it may be for you.—Patrick Fitzhenry



P.O. Box 19205
W. 7309 Will D. Alton
Circle, Suite E
Spokane, WA 99204
(509) 624-7072
List Price: General Ledger, Accounts Receivable, Accounts Payable, \$495 each. Also
available: two other modules; multisuser we-

sion.

Requires: 256K RAM; 20-Mbyte hard disk for all modules; DOS 2.0 or later.

In Short: Easy to use. Extensive on-line help. Ability to add records while doing en-

try. Selective report capability. Not copy protected.

CROLE 662 ON READER SERVICE CARD



Buying a PC right now requires a real keap of faith. With dozens of names and hundreds of systems, it's easy to end up with something that falls short of expectations GE Rental/Lease, on the other hand, allows you the houry

GE Rental/Lease, on the other hand, allows you the hoxury of discovering the strengths, and the weaknesses, of a PC system, by renting before you commit to a purchase.

GE Rental/Lease offers immediate availability of a full line.

GE Rental/Lease offers immediate availability of a full line of IBM PC, XT and AT computers, a range of lower cost compatible systems, and the brand new IBM PS/2 that has everybody talking. Not to mention the latest from Compag, Wyse and Apple

GE Rental/Lease gives you a choice of terms, ranging from as short as one week's entat to long term leasing. And, our Rental Equity Han, which combines rental dollar redies with a guaranteed discounted price, gives you a purchase option that makes the eventual leap to buy a smaller step to take.

LIMITED TIME FREE PRINTER OFFER.

And, from now until October 30, 1987, if you ent or lease an IBM or compatible PC under our Rental Equity Plan, you'll receive one month free ental on an Epson printer.

CALL TOLL-FREE 1-800-GE-RENTS.

6E Computer Service

Before you take the plunge, call us. We'll take

Call Toll-Free I-800-GE-RENTS or mail this coupon.

Call Toll-Free I-800-GE-RENTS or mail this coupon.

Yes. I'm interested in talking to a representative about GE
Rental/Lease.

Yes. I would like to know more. Please send me your FREE CATALOG of Rental/Lease products.

 I'm also interested in finding out more about the total capabilities of GE Computer Service, a leader in independent maintenance and repair services.

Inne Tride
Company Phone
uddress
Dry State 7in

Send to: GE Computer Service, Rental/Lease Operation PO. Box 105625, Atlanta, GA 30348

CIRCLE 261 ON READER SERVICE CARD

Myte Myke

The Myte Myke General Ledger, Accounts Receivable, and Accounts Payable modules, sold by M & D Systems for \$795 each, are designed to work with the company's full-featured manufacturing and distribution system. As standalone packages, they are limited.

To set up the programs, you must enter appropriate journals into the General Ledger module to capture transactions generated from the Accounts Receivable and Accounts Payable modules. You can customize these journals to post entries to specified accounts, allowing for a significant amount of flexibility in configuring a system.

Since the system is able to handle only one set of figures for comparisons, you must choose at the start whether to maintain budget or prior-year comparative figures. Alternatively, you can maintain a separate directory to hold the master file containing the second set of comparatives. At month end, you could copy each set to the active directory, update them in turn and then print our treports. Myre Myke maintains a maximum of 13 comparative buckets. "A north end, it rolls the tu-



Side S. Daystens inc.
3885 N. Buffalo Rd.
P.O. Box 108
Orchard Park, NY 14127
(716) 662-6611
Left Price: General Ledger, Accounts Receivable, Accounts Paysuble, 5796-earth pate ten-user network,
\$1,095 per module: more than ten users or
miniconjuster version. \$1,495 per module.

Also available: 14 other modules, source code, Runtime COBOL. Requires: 256K RAM; hard disk; DOS 2.0 or later.

In Short: Limited input and screen handling are somewhat offset by flexibility for customization and operation in many environments. Best used with related manufacturing or distributions systems. Not copy protected. ORCE THE OFFICIAL STREET, CAN



Myte Myke uses the same data entry screen in the General Ledger, Accounts Payable, and Accounts Receivable modules. Predefined distribution choices are listed at the bottom of the screen.

tals in the buckets forward by one period.

Myte Myke can run as a single-user PC
system or necrtain networks and larger
systems. As a result, at least partly, of attempts to accommodate these environments, the system's screen-and error-han-

diling abilities are weak. You must make most entries in capital letters, and if you try to print a report when the printer is off-line, the system often throws you back to DOS. When entering instrusctions, you cannot use the cursor keys to move through the screen but instead must complete each entry line by line, to change a line, you must give the line, to change a line, you must give the best of the line, to change a line, you must give the best of the line, to change a line, you must give the best of the line, to change a line, you must give the best of the line, when the line of
PROGRAM FEATURES. The General Lodger module, which has most of heattures common to all the modules, verifies accounts at time of entry and maintains control totals by each transaction. It uses the chart of accounts as the basis for designing output reports. Myrk Myke identifies accounts as marriave, heading, suspense, profit, posting, or accumulator with a type code. Deposing on the type chosen and its order in the chart of accounts, Genand its order in the chart of accounts. Gender in the chart of accounts. Gentlement of the chart of accounts of the chart of accounts. Gender in the chart of accounts of the chart of accounts. Gentlement of the chart of accounts of the chart of accounts. Gentlement of the chart of the chart of accounts of the chart of accounts of the chart of accounts of the chart of accounts.

and income statement.

General Ledger can also maintain up to
24 predefined profit-and-loss schedules.
You can define a schedule to select only a
division or a department and to be in de-

tailed or summarized form. You can give it a unique title, and once it's defined, you can invoke it at any time. Although the program warns you when an unbalanced journal entry is about to be posted. General Ledger dues allow the posting of the unbalanced entry. It also allows the deletion of

yte Myke can run as a single-user PC system or on certain networks and larger systems.

an account with history or current data,

creating an unbalanced general ledger.
Although limited, the Accounts Psyable and Accounts Recyclable modules are sufficient for many needs. For \$150, you statements, and so forth in a format year an modify. The system does not maintain a file of checks for bank reconcilation, although it will print 1099 forms. The Accounts Receivable can handle Camadian federal salests and thas a reasonably flexible way of dealing with finance charges. Both these modules can produce customer

Myte Myke is well known for its manufacturing system, but it is, at best, only an adequate standalone accounting system.

EasyPRINT—New Easy Solutions to Printer Sharing from \$79.98 to \$149.98 per PC.

Do you have two or more IBM or Compatible PCs, ATs, or Personal System/2 computers that need access to an expensive laser printer or plotter?

If so, then select the low-cost printer sharing solution that makes sense for you from our free EasyPRINT® Catalog.

The BasyPRINT catalog reviews five confidence and 3 PC starter kits that let you share up to four printers, to 7 and 8 PC configurations sharing up to 32 printers. Using the chaining capability of our new advanced CrossPOINT** switch, up to 25 PCs can share up to four printers.

And you can consult (toll-free) with our printer sharing experts before placing your order.

The CrossPOINT switch makes the print.

The CrossPOINT switch makes the printers in your office work together as an organized unit and offers dramatic economic benefits.

PC Magazine in 1985 profiled the ideal printer sharing system. We compared their wish-list against EasyPRINT, and here's how we stack in:

PC Magazine Profile EasyPRINT

Hook up any number of Yes

PCs to a printer.

Support your choice of:
Letter Quality
Dot Matrix
Baser
Plotter
Laser
Plotter
Large segmented print
buffer.

Accept all incoming print
jobs no matter if the printer
is buse.

 Support mixed serial and parallel devices.
 Any 3-4 users should be able to justify a joint purchase of all three printer types.

Highlights

- Expandable—from 2-25 PCs
 Supports serial and/or parallel
- printers in any combination

 Totally automatic
 - Speeded printer com
- Spooled printer services
 Cable lengths to 500 feet.
- Economical—configurations start at \$79.98 per PC.

"Best bargain."

-PC Magazine, April 28, 1987



Exclusive Capabilities

- Up to 25 PCs can be chained using the compact, advanced CrossPOINT switch.
 Modular telephone line cabling makes
- installation a "snap."

 Advanced Forms Support solves the paper changing problem on a shared printer.

 Now PC users can print regardless of the
- type of paper mounted on the printer.

 Three software packages, EasyPRINT,
 Print-Q® and a special version of EasyLAN,® are integrated with the CrossPOINT
- EasyPRINT and DOS take 60K, leaving 580K for memory intensive desktop publishing programs such as Windows® and PageMaker®

How To Order Your Free EasyPRINT Catalog

Call for our Free 12-page EasyPRINT Catalog Toll Free 800/835-1515 in U.S. or Canada, or 800/232-7729.

Catalog contains \$100 Trade-in Coupon. Send your coupon along with your old A/B switch box, and we'll give you \$100 off on any Easy-PRINT product that uses a CrossPOINT switch.

Page Maker in a registered trademark of Aldon Corporation	
Print Q is a registered trademark of Software Directions for	
	ı
Order by Phone Call in U.S. or Can	à
(000) 005 1515	

(800) 835-1515 Or (800) 232-7729 offiguration Assistance & Technical Que-Call (503) 485-4254 or (408) 738-8377 Place your Order Immediately

Place your Order Immediately
Dealer Inquiries
Invited

Name
Address

Gty
State
Telephone J

Telephone J

Payment: Visa, MasterCard, Check, GOD, Bank Draft Name on Credit Card

Cr. Card No. Exp Date //
For European Sales and Reseller Information Contact:
Trust International, Brussel/Bruselles, Belgium

Tel: 02/60/89/24 Telex: 62/833 Telefax: 02/66/8868 Server Technology, Inc., 140 Kifer Ct. Sunnyvale, CA 94085, Telex 5106003481

Order	Form	

Item	Description	Price	Qty	Amount
EP-200	EusyPRINT Starter Kit 2-PCs. With EusyPRINT software.	\$ 159.95	-	٠
EP-300	EusyPRINT Starter Kit 3-PCs. With COM2 serial port and Eusy- PRINT software.	\$ 349.95	-	
EP-700	EusyPRINT for 7-PCs. With Cross- POINT switch and EusyPRINT software.	\$ 699.95	_	٠
EP-750	EuroPRINT for T.PCs With Cross-	\$ 999.95	_	s

Cultifornia Besidents add state tax \$ ____

Shipping Charge # _____ Total Order Amount # ____

ACCOUNTING

Myte Myke becomes more attractive when the manufacturing or distribution modules are added, especially because it's able to run in many operating environments. Without those modules, however, Myte Myke's cumbersome screen handling and limited error-detection routines make it more difficult to use than many other packages.—Brent V. Shirley

NewViews

NewView, from Q. W. Page Associates, a Canadian company, was introduced in the Unid Sanchest (1994), was in the Unid Sanchest (1994), which was in the Unid Sanchest (1994), was introduced in the Unid Sanchest (1994), was
NewViews won a PC Magazine 1986 Award for Technical Excellence for bringing a new standard to accounting (see "NewViews: A New Paradigm for Accounting Software." PC Magazine, Volume 6 Number 10). But while it handles data efficiently, the program suffers from a lack of accounting controls.

In April Q. W. Page introduced Release 1.10, which is faster, supports color

SALES INCOME COST OF COORS SOLD	Start	11.538.16 34.072.02	
CHOSS PROFIT	Foliar Nove Purge		54,466.14
Tenngue	Transfer	Bra let 1. F	Qp -
AND DESCRIPTIONS	176/91/67		LOT HAVE
FURNITURE AND FLYTURES LESS ACCUM. BEPR.	2,100,00	9,000.00 9,255.00	2,722.00
NET FURNITURE AND FIXTURES	3,267.00	545.00	2,722.00
TOTAL FIXED ASSETS	15,020.00	93,615.00	4,559.89
TOTAL ASSETS	179,728.99	237,363.16	66,643.16
lamene	DEC 21, 1916	DEC 31,1587	CHINGE 66-67

NewViews' pulldown menu, at the center of this screen, can be accessed with the Slash key as in Lotus's 1-2-3, the Ctrl key as in WordStar, Alt-key combinations, or an optional mouse.

monitors, and has a keystroke-logging routine that lets you rebuild files in the event of a power failure, glitch, or accidental rebooting of the system. In the original version, your data would have been

Also with Release 1.10, users no longer have to call Toronto to receive a registration number after year-end processing. In the past, companies were given ten sessions to call and get a new code, or they would be locked out. Those using the earlier version, Release 1.06, will still have to call to get this number.

Although only the reports (general ledger), accounts receivable, and accounts payable operations were tested, this system can be used for costing, tracking inwentory and payroll records, and performing time and billing procedures.

Bringing up a new set of books requires extensive preparation. You must plan your reports and the accounts they will contain. As in 1-2-3, recalculations can be switched off and on to allow for a large volume of entries. There are no tutorials, and the index in the documentation is rather difficult to follow.

USER DEFINED General Ledger and subsidiary ledgers such as General Journal, Accounts Payable, and Accounts Receivable are also user defined. Report authorities must be structured so that each instanction ripples from the Distributions view through the Accounts view to the Reports view. It is possible to add reports and accounts, later, but this can be time-consuming.

Various account ledger views allow you to review history, debit, credit, open, and closed transactions. This option is ideal for reviewing customer payments or cash disbursements. However, the system alone cannot properly handle discounts, and it inaccurately usees navables and re-

and it inaccuracy ages payares and receivables from the month-end date rather than the day of the report run. These must also be defined by the user. Each level, or view, in the hierarchy also has three subviews: Setup, for report

also has three subviews; Setup, for report arithmetic and transaction entry; Analysis, for custom reporting options, and Notes for entering comments. The Analysis view can generate an al-

The Analysis view can generate an almost limitless variety of reports. It allows for entry of budget figures, revised budgets, forecasts, and history up to 10 years.

Many standard accounting controls built into modular packages are optional with NewView. You are not forced to print transaction edit lists prior to posting because, since NewViews is a real-time system, each transaction automatically updates the respective account.

Those who possess programming skills and have unique accounting requirements can use the NewViews procedural language (NPL) to customize procedures. This is not convenient for many users, however, and a number of basic functions included in most structured packages must be run through sophisticated and sometimes cumbersome procedures with NewViews.

NewViews compromises accounting control for flexibility and real-time information. This package offers some very

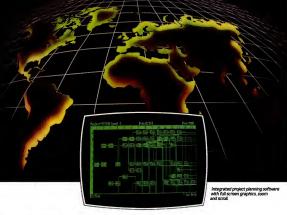


(416) 923-4567 List Price: \$695 in the U.S.; \$895 in Carada.

Requires: 256K RAM; hard disk; DOS 2.0 or later.

In Short: Real-time accounting in a hierarchical structure with spreadsheet characteristics. Requires heavy user preparation: lacks definitive accounting controls. Not copy pro-

CIFICLE 800 ON FEADER SURVICE CARD



NOW THE BIG PICTURE FITS ON THE SMALL SCREEN.

With Project: Vision, even busy people can do the right things, the right way, right now. And keep complex projects under control without aggravation.

Project: Vision is the first integrated project planning software designed for managers with too much to manage.

Even if you've never used a Cantt Chart or the Critical Path Method before, you'll feel right at home. In fact, many spreadsheet users start creating project plans without ever cracking the manual.

Project: Vision zooms in on five levels of detail to show you how you're doing. And it's

easy to update others on your progress with the built-in report generator. It also links directly to Lotus 1-2-3 for forecasting.

At just \$349, Project/Vision could pay for itself in the first month you own it. Perhaps sooner if you purchase a site license. Winy wait another day? See it on a screen near you by calling limnax at 1-800-922-7774. In Weshington state, and 1-800-648-7775. Or writer to us at 200 West Thomas Street, Suitle 110, Seattle, Washington 98119.

PROJECT: VISION
INTEGRATED PROJECT PLANNING
FROM INMAX

ERSIONS AVAILABLE

TAS-Plus is the **Accounting Solution!**

Our Accounting FULLY MODIFIABLE with TAS-Plus NON COPY-PROTECTED

IBM PC/XT/AT

compatible.



TAS-Cash™

A complete entry level bookkeeping system that anyone can use. Comparable to the best single entry accounting systems. Mistake-proof balancing. Complete audit trail. Journals, bank balances, and up-to-the-minute financial statements are available at the touch of a button. Extra features include check writing and customer statements. Complete documentation and free 30 day telephone support

to help you get started. Fully upgradeable to TAS-Books, LAN version available



TAS-Books"

The easiest, most complete double entry accounting and reporting system for small and you with the same pull-down menus as the rest of the TAS

On-line help screens are just a keystroke away G/L, bank account management, A/R, order medium size businesses. Guides entry, invoicing, customer statements, A/P, Purchase Orders, unit and dollar inventory, payfamily of accounting solutions. roll, check writing. All modules

design. Automatic backorders.

are fully integrated. Complete journals and financial statements. Fully upgradeable to TAS-Advanced Accounting, LAN version available.

SOURCE CODE IN

SOURCE CODE INCLUDED



TAS-Advanced Accounting The ultimate business tool for ment formats. Flexible format.

the most demanding business Account for multiple companies or separate profit centers. Produce departmentalized financial statements. Create multiple financial state-

Partial shipments. Automatically bill and pay recurring charges Multi-location inventory Product price matrix permits complex price levels and

CIRCLE 472 ON READER SERVICE CARD

discount structures. Automatically calculate sales commissions and track quotas, LAN version available

SOURCE CODE INCLUDE



TAS-Plus Relational Database" entire TAS accounting family.

The complete, powerful DBMS used to create all TAS accounting products. Add TAS-Plus and modify any of our accounting products Take total control over reports and programs. Tailor them to meet any need Even add new ones Like th

TAS-Plus comes with complete documentation and free 30 day telephone support. LAN version available. Ask about our professional TAS gramming service

SUBTOOL

Ask about our continu computer forms.



Order	today 1-800	-648-6258
Ask for	the Order Desi	or mall in
	upon ton State residents co	

Washington State residents call [206] 644-			
Name			
Company Norms			

9

ent (circle one) VISA MC AMX Check COD Credit Card Expiration Date. ____ ard Number.

BUSINESS I TOOLS I

Cascade Business Park H25 12th Ave NW Suite B 2 12061 644-2015

Money-back quarantee er products for 30 days.

they're not exactly what ust send them back. You'll get a full refund (less \$15 handling fee).

good processing capabilities but could pose a problem for an inexperienced user or one accustomed to a structured accounting routine. - Brian D. Callow

Open Systems Accounting Software

Open Systems of Eden Prairie, Minnesota, provides source code for all the modules in its \$795-per-module Open Systems Accounting Software program-an attractive bonus for anyone wanting to customize the accounting package to suit his business. This makes Open Systems a good option for an integrated financial management reporting system. However, many features in the individual modules are not as impressive as those in other comparably priced packages.

screen is simple to use: you enter the company ID, entry date, accounting period, a source code, entry description, reference, and the General Ledger account code. Edit controls prevent you from posting an outof-balance entry or from posting to a nonexistent account.

The program computes the balance as

Open Systems

W-2 (800) 328-2276

printer; DOS 2.1 or later.

Accounting Software

6477 City West Pkwy. Eden Prairie, MN 55344

List Price: General Led-

Open Systems Inc.

(612) 829-0011

ger, Accounts Receivable, Accounts Pay-

able, \$795 each; \$295 Resource Manager must be installed to run any module. Also

available: ten other modules, multiuser ver-

Requires: 512K RAM; 10-Mbyte or larger

hard disk; Open Systems Resource Manager. Version 3.0; condensed type or 132-column

FILE



Open Systems Accounting Software lets you quickly access a customer's account status and open invoices by using the customer and invoice inquiry function.

changes.

Open Systems lets you define recurring entries. However, it does not offer standard or reversing journal entries that allow quick transactions.

Although you can define your own chart of accounts. Open Systems does not go quite far enough into facilitate modem inancial reporting. The account number is, essentially, a single element.

You must close the year before beginning a new year's transactions. This can be awkward for organizations that close the books a few weeks into the next period.

HANDLING CUSTOMERS Accounts Receivable recognizes three types of invoice transactions: credit sales, cash sales, and credit memos. Freight and miscellaneous charges can also be entered on the invoice. The cash receipts screen is simple and effective for recording payments received from customers, as well as for recording noncustomer receipts and applying prepayments. Sales history is maintained for each

customer. You can generate customer statements and add dunning messages, such as "Your account is 60 days past duc."

The system has a hold-or-release function that lets you put certain invoices on

hold so that they won't appear on the customer's statement. Credit memos and cash receipts can also be held. The customer and invoice inquiry functions let you quickly assess the status of a customer's

Besides the standard journals and reports, Open Systems also lets you report cash flow, customer analysis, sales history, and other useful management information. But the interface to the General Ledger allows only one cash account and one accounts receivable account-and they cannot be overriden

You can process vendor invoices, prepare debit memos for returned goods, print checks, and employ on-line inquiry into vendor accounts.

Since terms for each vendor are stored in master files, the system automatically calculates due dates and discount dates. You supply the warehouse ID, invoice number, date, purchase order number, and invoice detail. For each payment cycle, you enter a specific date, and all invoices due on or before that date will be selected for payment. This process is disappointing and limiting. Comparable systems offer several options.

You can review and edit the invoice list and make partial payments, hold invoices, or release invoices for payment. The cash flow report allows you to project your cash outlays for up to three dates that you sup-

ply to the system. Documentation is good. Each manual offers you lessons with sample data for hands-on experience, installation instruc-

In Short: A fully integrated and flexible accounting system, but with cumbersome entry and ext. The company supplies BASIC source code, making third-party customization an attractive option. Not copy protected

ACCOUNTING

tions, and operating instructions. On-line help, however, is not available.

Open Systems Accounting Software's strengths lie in the range of modules integrated in its family of applications and the opportunity to customize the software. Thirteen modules are available. It is generally not a good idea to make unnecessary modifications in the Open Systems software, but if your business practices are unique, the customization option could make all the difference.-Terri C. Connor

Platinum

Platinum accounting software, from Advanced Business Microsystems (ABM), appeared in late 1985. In its current state, it is a full-featured package, and according to the company's literature, there are many modules yet to be released.

Installation is easy. You put the system manager disk in drive A; and type "install" at the system prompt. The installation program does the rest.

As each application is installed, the system evaluates the available hard disk space and advises how much disk space will be required by the module being installed. If you have insufficient space, you can stop the process. This is a useful feature if you have a lot of other software installed on your hard disk and might risk not having





Platinum, Version 4 Advanced Business Microsystems Inc. 19712 MacArthur Blvd., #210 Irvine, CA 92715 (714) 851-8722

List Price: General Ledser, Accounts Receivable, Accounts Pavable, \$795 each. Also available: seven other modules; System Manager, \$95; Spreadsheet Interface \$695 network week

Requires: 512K RAM; 360K hard disk; condensed type or 132-column printer: System Manager, DOS 3.1 or later. In Short: New, with some outstanding features. Could use some enhancements but well

worth considering. Not copy protected.

HET SILES (188/) ICCOUNT NO CONSIST JOSENS

Platinum's automatic iournal entries provide interim management financial statements Gross profit inventory adjustments, tax accruals, and account reallocations are available.

enough space for installation.

Setting up a company's initial data can be trying, due mostly to awkward documentation and the use of some unique terminology.

Platinum lists a keystroke sequence that is intended to summon pop-up help, but the help simply isn't there-vet. The documentation advises that help text will be supplied as it is developed. However. Platinum does give you the ability to write your own help and procedural prompts. This user-defined help can be recalled with a keystroke sequence.

General Ledger contains some very powerful and very useful features not found in many other systems. Among these are the ability to automatically: accrue state and federal income tax (at userdefined rates), adjust cost of sales through inventory using an estimate, and reallocate account balances to other accounts or departments.

Within Platinum, budget maintenance is very basic. Unlike many systems that provide the means to replicate one month's figures for all other months, divide an annual figure by 12, or use a base figure with a growth percentage, this system makes you input each month's budget figure input directly. But to this program's credit, there are two budget columns that allow for the original budget and a revised budget when conditions change.

Platinum's Spreadsheet Interface should be considered if budgeting is done frequently. The interface will output reports directly to an interactive 1-2-3 spreadsheet (complete with all the necessary formulas), let you run 1-2-3, and return the revised budget to Platinum-all with menu selections from within Platinum itself.

Most accounting systems will allow only financial comparisons of current-year balances with the prior year. This system can compare account balances for any accounting period using several years because the balances are maintained in "year" files. Such reporting is particularly useful for trend analysis.

Accounts Payable includes all the standard management reports and gives you a provision to define some of your own. It offers navment selection with security built into a "responsibility" hardware key, which is useful if more than one person approves payments. The system also tracks 1099 candidates.

In many systems, if a vendor has not been established, during voucher input, the operator must stop and setup that vendor before the system will accept the invoice. Platinum eliminates that interruption by back writing necessary vendor information and certain vendor defaults at voucher input, collecting the information now and putting it into the vendor file later on in the process. All reports available through Accounts

Payable (as well as other modules) can be printed to the screen. Interestingly, even checks can be printed to the screen and then posted as payments to voucher history. This is odd because the system furnishes adequate pre-check reports. Accounts Receivable, like Accounts Payable, includes all the standard management reports and also allows backwriting of customer defaults at the point of input. In addition, it gives you the ability to define reports that will provide analysis by salesperson, customer, territory, or inventory item.

Accounts Receivable invoices contain expandable room for item numbers and descriptions; the program automatically ertends the invoice for the quantities shipped based on the unit price for the item. Up to four sales tax rates may be linked to each customer. When the sales tax 'key' is entered, sales tax is calculated unless the key indicates that the sales is tax exemple.

Platinum has some unique features, seems to be powerful and capable, and has some extremely flexible report writing capabilities. But it suffers in some ways from its youth, and it is probably not a system for accounting departments that lack good and well-established internal accounting procedures.—William H. Stewart

Powerpac

With nary a module in sight, Powerpac is a fully integrated accounting package sold by Financial Information Systems. For \$765 total, you get General Ledger, Accounts Payable, Accounts Receivable, Invoicing, and Inventory—everything but Payroll.

Installing the system calls for creating a System Profile for the Main Default account numbers. According to the vendor,



11/11/87	Bullin level Jesen	k of Ark Gritmers.	
#) Cest # 4) City #) Castact From 10) Castact From 16) Castact Bet 16) Casta 28) Tetal Ben	5) State 5) State 5) Salesparces 13) Lest Set Sets 12) Credit Limit	2) Sidens 1 6) 2:p Code 98) Tabl Bute 16) Tores 18) Out Halance	3) Address 2 7) Telephone 3 11) Frice Iv(1-3 15) Reporteent 21) Tetal Faid

What Cast Ness do you want to swarch for? SWE

Ecter 9 of search type (1 19) 4	TOPY MINUS
1) Exactly Mutches	2) Degles with
3) Ends with	4) Costains
5): (Equal to)	6) () (Mot equal tp)
7)) (Creater than)	8) >> (Orester than ar equal to)
9) (: (Less than or equal to)	18) () (Less than)

Powerpac lets you perform a multilevel search of accountsreceivable customers. This could be useful for isolating customers with large outstanding balances.

using this profile helps the program work as fast as it does. Finishing this step leaves you in the subdirectory \PPAC; typing POWER gets you into the program. You then set up your chart of accounts

with the same numbers used in the System Profile. Subsections appear only in the chart of accounts. To enter the journals, you must use a password, either the one from the sample data or any one you designate. Entering Accounts Payable and Accounts Receivable requires an on-line printer as well.

The tutorial section for each journal

helps you establish the chart of accounts. The first digits of any account number must conform to the *Powerpae* account setup for a valid chart of accounts, for example, 1 is for assets, 12 for current assets, and so forth. The subsequent choices are yours to make, however, such as 1230 for cash in hank.

When you enter, use, and exit Powerpac, quick statements appear between screen menus, such as "Making a backup saves time later" and "Back up every day." The program automatically saves all your work when you return to Powerpac's main menu or complete ten transactions in

Powerpac's menu screens list the function key choices. The lower-left-hand corner of each screen displays the date and the running time; the name of the current menu in use is displayed in the top center of the screen. Each screen lists additional options that take you into subscreens with more options.

SEARCH FEATURE Powerpac's big plus is its extensive search feature. It helps you gather information and create varying lists and reports quickly. Another plus is that reports print out with the time and date in the left-hand comer—a handy marker, especially when you've produced several

corrected printouts.

A minus is the budget screen's layout, which identifies each month as Bud. Mo. 1, Bud. Mo. 2, and so forth. When prists enter data, the figures line up next to the month numbers, making your entry apear larger at first glance. The figure moves to the correct position when you hit the Enter key.

Powerpac's General Ledger can handle up to 1,000 account numbers and can maintain 6,000 items. It keeps 2 years of prior-account history and includes an audit trail. The General Ledger accommodates annualized or 12-month budgeting. 2,000 items in the general journal between updates, recurring journal entries, and profit-and-loss comparisons between actual and budget. It does not permit out-of-balance entries.

Accounts Receivable features include a balance-forward system, aged receivables classifiable by six user-defined periods as well as by customerclass or salsports, an invoice search feature, detailed sales reports, customer setup while adding invoices, and automatic application of finance charges and sales tax reports. Accounts Receivable prints labels and statements but doesn't accommodate different shipping addresses. **SUCCESS**

The ACER team is working hard in 60 countries round-the-world, round-the-clock. We'd like to do the same for you.

At Acer Technologies, our it will run tomorrow's commitment to research and development has enabled us to 32-bit build better - and more afford- programs able machines

Take our revolutionary ACER 1100 for instance. An 80386-based personal computer, the 1100 is the culmina-

tion of our accumulated successes over the years. Already it is setting the standard for

others to follow Here today, here tomorrow

Driven by the power of a 16MHz 80386 microprocessor, the ACER 1100 delivers powerpacked minicomputer performance. The fact is, the 1100 is 10% faster than the fastest 80386 around, to date. And that's just the beginning.

The ACER 1100 expands the limits of today's computing runs US\$6 billion worth of existing software up to 300% faster than standard AT's, Plus,

advanced

up to 1000% faster than the AT's of today.

Success is in your hands With 32-

bit architecture. unique interleaved memory and massive expansion ability, the 1100 speeds you into the realms of tomorrow

Power hungry users will find the ACER 1100's generous memory, storage and lightning processing speed indispensable for financial applications, CAD/ CAM, CAE, software development - even artificial intelli-

gence applications. Not to mention network server needs. So, for calculation-intensive applications, success is certainly

in the books. Success upon success Acer Technologies designs and manufactures a complete

line of personal computers and peripherals to cater to indivi-

dual needs. Like our range of 900 personal computers. Totally

compatible with the industry

standard PC/AT, the ACER 900 was dubbed "the AT standard to beat" by Computer Currents. a U.S. publication.

SUCCE BREEDS

ACER Acer Technologies Corporation 401 Charcot Avenue, San Jose, CA 95131.
Tel: (408) 922-0333. Fax: (408) 922-0176.
Silicin Walny-Doublant-Majoritage Soli-free nos: (800) 792-1155 (CA only), (800) 538-1542.



■ ACCOUNTING

Accounts Payable features include ten account distributions per invoice, an aged invoice report with six user-defined periods, vendor setup while adding invoices, three ways to choose invoices for payments, and maintaining recurring payments. The program prints checks and 1099 forms.

Powerpac's user manual is organized in numerical screen sequence and shows sample screens. It could be improved by adding a chart that lays out screen flow (starting from the main menu), a summary of the keystrokes needed to perform certain tasks, and a glossary of accounting terminology. The vendor promises a muchimproved manule.

A fully integrated, nonmodular accounting system, Powerpuc handles double-entry accounting fast and well. Its menus, screens, function keys, and search feature make it easy to use, and its password protection makes it difficult to corrupt. At \$765 for the complete system, the price is right.—John Somost.

The ProFit Series

Using Crossways Technology Crop. 3r The ProFit Series on a PC is like synchrolis states on a PC is like synchrolis states and was a stall was a word, but with succomfortable, and you can't go far. The ProFit Series, a ten-module, \$1,1959-pc-mit-Series, a ten-module, \$1,1959-pc-mit-Series, a ten-module, \$1,1959-pc-mit-Series, a ten-modulen-sized accounting firms, was originally written in BASIC for small to medium-sized accounting firms, was originally written in BASIC for use on the IBM System/2 and later upgraded to run on the System/36 and the System/36 and the System/36 and the System/36 to
To run the modules on a PC, you first must install a copy-protected version of Workstation BASIC on top of DOS. If you have at least 5 megabytes of storage space available, you can install the program files directly on a hard disk by using a batch file. The installation process creates 12 subdirectories.

As you begin to install the modules, the poor mesh of the *The ProFit Series* and the PC becomes apparent. Take the user interface, for example. Although *ProFit* uses menus to good advantage, none of the modules take advantage of the PC's keyboard. The sourse documentation refers to

```
DOMEST Annual Section Southern Southern Section Sectio
```

COMPY 1-Ind 2-Perk Field 3-Black Out

98778 C\CL3828

In the chart of accounts of The ProFit Series, you can describe the account at the same time that you set up an account number.

the Alt key as the command key, the Esc key as the Inq key, and the gray Plus key as the field plus key. Only three of the function keys are programmed, unimaginatively durlicating other keys' movements.

INPUT CINGLESOCKELSBER. NO

Furthermore, no on-line help is available. When you encounter problems—which happens frequently as you set up the accounts—the package offers no easy escape when it hangs. Luckity, Crossways Technology's competent, courteous technical support staff is available to answer queries.

MADE FOR ACCOUNTING FIRMS
The General Ledger module, called the Financial Accounting Package, also includes
an after-the-fact payroll system to produce
W-2 and 1099 forms. Since Crossways
created the Financial Accounting Package
for accounting firms that need automated
client write-ups, it can handle an almost
unlimited number of clients.

Setting up accounts is menu driven aind straightforward. As you organize a chart of accounts, the module lets you define different posting and totaling levels. The system can maintain up to 99 departments and produce departmental or consolidated statements. It recognizes 12 accounting periods, and you can close the month at any time and go back to do prior-period adjustments.

The eight journals can use a hash total as control. After you enter a transaction in a journal, the system posts it to a work file; if the work file is in balance, the system can then post the transaction to the General Ledger. You enter and maintain

recurring entries from the main menu, and the system can post them as you enter them.

U 1 21:54

The module produces a number of supporting reports in addition to the standard balance sheet and income statements. You can print any or all of the eight journals as audit traits, year-to-date trial balances, departmental profits and losses, and comparative reports.

In setting up the versatile Accounts Payable module, you must identify the corresponding General Ledger accounts before setting up the vendor accounts. The program can then validate account numbers during data entry. Maintaining the vendor file is a simple, menu-driven affair,



Get your message across in a matter of minutes.



Lotus Express"—now you can send and receive messages and information in minutes.

When you send something "express," it shouldn't take all night to arrive. Now with Lotus Express for MCI Mail," it doesn't. In fact, for very little expense and just a few minutes, you can send

important messages and data clear across the world. Send anything—even PC files—right from your desk.

Lotus Express is communications software that lets you send and receive spreadsheets, word processing documents, electronic mail," files and telexes—anything that you can create with your PC. And it's easy to use. So you never have to waste time with manual file conversions, releying, or reformatting.

or restrictions. With Loss Express, you simply enter the recipient's user name or address. Use the full-screen editor for easy composition. If you need to send a PC file, just select one simple command and specify the file name. Then send your raid on its way with the 'transmit command. No manual logrows, No script writing. And you never have to unload the program you re

working in.

Minutes later, your message or file arrives at its destination in usable and revisable form—formulas and formats intact.

Save time, money and trouble.

With Lotus Express, there's no complicated communications software to learn. And no need to alert the receiving party, or sit by your PC while messages are being sent or received. What's more, Lotus Express lets you maintain local mailing lists on your PC.

Best of all, you can send information much faster than overnight couriers (for a fraction of the cost), and with speed and quality transmission you can't get from a FAX.

Get your mail automatically.

Receiving information is even easier than sending it. In memory-resident mode, Lotus Express automatically logs on and checks your MCI Mailbox at intervals you specify. It downboards your messages to your PC, files them on a disk, and "beeps" to let you know they've arrived. All you have to do is read them. And that's easy too, because Lotus Express

indexes your messages by date, time, sender, and subject. Just highlight the message you want to read and press "return." What's more, you can flie your messages, in "folders" that you create, with index information readily visible on a summary screen.

Reach almost anyone.

To use Lotus Express, all you need is an IBM® PC or compatible, with a Hayes Smartmodem, *or true compatible.** You can communicate electronically with other MCI Mail users or CompuServe* users.

Lotus Express and MCI Mail will also deliver to any postal address—or any of the 1.8 million telex users around the world.

Order Lotus Express risk free.

Isn't it time you saved some money on your overnight courier bills? And sent your information quickly and easily?

For only \$100, you can buy a copy of Lotus Express for MCI Mail directly from Lotus." Your MCI Mailton is FREE for the first year. And you also receive your own telex number. Of course, if you're not completely satisfied within 30 days, we'll give you a full refund.

So visit your local authorized Lotus dealer. Or call 1.800.345.1043 today. Ask for product QS-1757. For a 3.5" disk version ask for product QS-28167. (Or, for more information, call and ask for QS-2805.) Because when you need to send something 'express,' Lotus knows what it means.

Lotus Express

PC Communications Software for MCI Mail.

regulated traditionals, of Latin Development Corporation Structured in a registered traditional of the Corporation Structured in a registered traditional field the Corporation Structured in its a registered traditional field that is a registered service mark of M.T. Mad Corporation and Corporation Corporation of Corporation Corporation Corporation (Corporation Corporation Cor

Extinsic mail allows the sender to compare a memage and send it to another person's computer "mailbox." The receiver secrely checks his her mailbox, reads the message, and then responds in the same way.

"***IMBER_FOOTTOR Personale PC_DDBS_2 for stagers_IMB_AT_(DDB_3 box happer_C, OMPRIGE_PCONTABLE_FOOTTOR_FOOTTO

and you can add, delete, or change vendors at will.

The system inputs invoices and debit/rectif memos through the Purchase journal. You can make payments to a specific vendor or to all accounts; the program prompts you for the cutoff date and total cash amount to be released. The module can handle hand-cut checks and use purchase orders. Bedsets the standard vendor littless and payment of the company of the littless and the company of the littless and the litt

he ProFit Series is a sound accounting package with some problems—not with the way it handles accounting, but with the way it was adapted to run on a PC.

Accounts Receivable uses a menu-driven en system to handle account maintenance as well as cash receips. You can apply cash automatically to open invoices of manually to specific invoices. A complete series of reports is available—everything from an aged trail balance to an Open Invoice journal. The program can run statements at any time during operation, but you must use the Order Entry module to handle invoicing.

The ProFit Series is a sound accounting package with some problems—not with the way it handles accounting, but with the way it was adapted to run on a PC. While The ProFit Series may operate adequately on the big iron, it needs a better mesh to the PC keyboard, more-complete documentation, on-line help, and some additional revisions for use on the PC.—Jacqueline Masdoff and Partick Nicholas

PRO-IV Accountant

Written in the proprietary PRO-IV programming environment, PRO-IV Account, from Applications System Corp., is guage to customize the package, PRO-IV Accountant can also be used with just the run-time version of the PRO-IV cervironent. Training and support by the vendor, though available to individual purchasers, is designed for dealers.

A dealer knowledgeable in the PRO-IV environment may be able to overcome many of the difficulties we had in testing this product for use by an individual buyer. If you do buy it to install yourself, expect more than a few hurdles.

Installation is a complicated three-step

process:

1. The first step involves modifying your AUTOEXEC.BAT, CONFIG.SYS, and ANSI.SYS DOS files.

2. You then follow separate instructions to run the install program, which loads the program disks (ours took 25 minutes) and establishes security for the system. It took some calls to the vendor for us to get past the security setup; although ample security features are built in, the instructions for installine them are unclear.

With each module, you switch to the manuals for configuration and for setting up balances and master records.

If you install your program without customization by a dealer, you will find that PRO-IV commands must be in capital letters. If you forget and use lowercase letters, there is no message from the system pointing out the error.



DITES SAMPLET BUT SATE - ITEMS AFTER THIS SATE WILL BE IGNORED





List Price: General Ledger, Accounts Receivable, Accounts Psyable, 5700 each. Also available: six other modules; multiuser version; PRO-IV run-time version, \$300; fulldevelopment version, \$2,000. Requires: 512K RAM; hard disk; DOS 2.1

or later.

In Short: Designed to be installed and customized by dealers, the software has limitations and could benefit from a stronger user interface. Not copy protection.

CHICLE STS THE ADDRESS WALL CARD.

DIRECT MENU ACCESS This system does a good job with audit trails and store you offered access to memos in different modules without making you exit mendules you are in. This feature can be used, for example, to add a vendor or customer before entering an invoice. An inquiry and towaring feature lets you search and display master files, but you can't look up wendor or customer codes during transaction entry. The system checks for valid dates, identification codes, and bulanced dates, identification codes, and bulanced which date can be posted with a minimum and maximum date ranse.

You define the 12-digit General Ledger account code, but if you use department

> PRO-IV Accountant's vendor payment process runs a cash requirements report, selects the invoices to be paid (as shown here), runs a precheck register, prints the actual checks, and runs the final check register.



SIGMAVGA BRIDGES THE GRAPHICS GENERATION GAP.

True VGA Graphics... Delivered.

Forget the promises or the confusion. Sizma Designs cuts through the smokescreen of competing claims with the definitive VGA solution, including Mode 13. Introducing SigmaVGA, the high resolution graphics dis-play adaptor that provides 100% VGA BIOSlevel compatibility for the PC, XT, AT and compatibles. SigmaVGA delivers the future generation of PS/2 graphics software without compromising your ability to run existing programs. And it's available right now!

More Graphics Flexibility Than Ever Before.

There's no need to sacrifice your existing hardware investment or access to popular graphics modes in exchange for VGA capabil With SigmaVGA, you can have it all:

More Colors-A demonstrated sp of 256 colors out of a palette of 256,000. Now it's easier than ever before to represent complex information, execute designs or create intensely vivid presentations.

More Displays and Emulations-SigmaVGA drives digital, analog and mul sync monitors and provides EGA, CGA, MDA and Hercules Graphics emulations.

200,000+ EGA Boards Installed. A proven leader in the field, Sigma Designs has been supplying advanced graphics hard-ware to major OEM customers. Now you can take advantage of this superior technology. To find out more about SigmaVGA or other

advanced Sigma Designs products, see your local dealer or call 415-770-0100.

SIGMA VGA

VGA Enhanced Display Modes · 320 x 200 x 256 Colors (Mode 13)

- Out of a palette of 256,000 colors 640 x 480 x 16 Colon
- More resolution than ever before · 720 x 400 x 16 Colors or Gray Scales
- Easy reading 9 x 16 matrix in text mode lation Mor
- EGA, CGA, MDA, Hercules
- Monitors Supported IBM PS 2 Monochrome Display 8503 · IBM PS/2 Color Display 8512, 8513
- * NEC MultiSync (analog and digital m · Princeton HX12E · Compatible analog and digital mo chrome and color

ent, CA 94538 Telex 171240 Fax 415-770-0100



M





CIRCLE 252 ON READER SERVICE CARD

Don't waste your LaserJet investment. Polaris Software

You're not getting full benefit from your Laserlet or Series II investment. Because your wordprocessing, spreadsheet and database software only tan a fraction of its full potential. But POLARIS programs provide the enhancements you need to create documents that look as professional as their contents. Here's how.

Polaris PrintMerge...

is the general purpose program for memos and letters, reports and documents. Do true proportional spacing and alignment of text, tables, columns with any combination of old/new soft and cartridge fonts. Merge text with screen or output graphics from any program - draw lines, boxes, patterns - anywhere. It's the quick easy way to make documents look as professional as



Polaris Forms...

is a special program for quickly, easily creating professional-quality forms. Mix and position any combination of old/new cartridge and soft fonts anywhere. Justify copy, or set flush left, right, or centered in any width. Draw lines, boxes, patterns. Automatically repeat text, lines, graphics. Merge graphics and text from other programs. Make blank or completed, single or multiple page forms. Even have automatic serialization, date or time. Unique capabilities handle current and future needs without the time and expense of typesetters, graphic designers.



Align tables & columns

Polaris LabelMaker...

makes your customer's first impression of package and envelope labels a great impression. Quickly, easily create any style or size label printable by a Laserlet. Merge and format proportionally spaced words,

graphics, lines, hoxes, har codes for the master

LabelMaker automatically positions and prints multiple copies. Even include serial numbering. Everything you need - without the aggravation.

CIRCLE 379 ON READER SERVICE CARD

Microsoft Chart Order Direct Today...

Works With Your Software

including

dBase HP Charting Gallery R.Base DisplayWrite

ChartMaster

karelin

Lotus

MatMaster

420

AFT E

(crest

Polaris programs enhance virtually

rouses programs compatible software

HP Drawing Gallery SignMaster

Microsoft Word

Multimate

Parradec

Volksuriter

WondPerfect

Wordstor

Star 23/4.0 Laure Jul Co.

to make sure you are getting the full benefit from your LaserJet or Series II investment.

(In CA 800/231-3531)

for IBM PC, XT, AT & 100% compatibles. *Add \$6 shipping & handling, 30-day money back guarantee.

Polaris Ram-resident PrintMerce \$149* Polaris PrintMerse for WordStar 3.3 & 4.0 \$124* Polaris Forms \$149 Polaris Label Maker \$124*

Polaris Lines • Graphs • Symbols \$75* Polaris Fons Control for Word & WordStar 2000 (automatic PRD & PDF table generation) \$99* Polaris ScanControl \$99*

SOFTWAR

613 West Valley Parkway, Suite #323 Escondido California 92025 619/743-7800

codes, they must precede the account number. The chart of accounts cannot be copied to set up other companies or departments, and the program gives you no help when entering budgets. Each period is entered individually. The system handles recurring, but not self-reversing, entries.

Applications Systems says it is replacing the report writer with a more sophisticated version. The one we tested would not produce the balance sheet and income statement requested. A program bug kept the second and third title line on the first page of a report from displaying.

The Accounts Payable module catches duplicate invoice numbers and vendor codes. Defaults help with data entry. Aging categories are fixed at 30, 60, 90, and over 90 days. A security feature prevents double payment by warning you if you select an invoice for payment by the computer and also enter a manual check for the same invoice.

The Accounts Receivable module checks for duplicate invoice numbers. Billing is done through the Order Entry module (not tessed in this review). If a customer is not in the system when the invoice is entered, the system will not accept the transaction and alters you that the customer has one control to the customer and the customer has exceeded the credit limit. Entries

The system has no tutorial, and its online help is extremely limited. More-flexible form design for checks and customer statements, clearer error messages, and better documentation would be helpful. One manual refers to an Appendix A showing a menu tree, but this appendix is missing from the manuals. Appendix D in the General Ledger manual, entitled "Correcting Common Errors," deals with only two errors. The appendices of the Accounts Payable and Accounts Receivable manuals offer no information on errors. In attempting to print a report format, I received the message "Report not genned." There is no explanation for this message in the manual

PRO-IV Accountant was not designed to be installed by the end user, and the package, on its own, reflects that. If you work through a dealer or consultant and wish to customize a program, however, you may want to consider PRO-IV Accountant.—Claude Bartel

RealWorld Accounting System

Patterned on a popular minicomputer software system, RealWorld Accounting System, from RealWorld Corp., offers a fully integrated set of modules that can also be used independently on a PC. General Ledger, Accounts Receivable, and Accounts Payable modules sell for \$695 each.

The RealWorld packages use consistents means, screens, and procedures. Data integrates easily, but you can turn off integrates easily, but you can turn off impaint in each package until you are nearly to use it. The reports include an impressive range of choices to limit and select data, and the printouts help you remember the order in which they were printed by including all the options selected: date, time, and a sequential report number. An on-line help facility is available to explain the program that you are in all times.

The meas structure leads you to each screen and report, but once you've learned the system, you often wish for a quicker way to move between screens. If you haven't set up a master item (wender, cash to the state of the state

Detailed explanations walk you through installation. Each module takes about 15 minutes to load. Once you add optional passwords for each operator and each menu choice, you are ready to begin.

Renlivord's account structure is based on a four-digit profit center entered as two separate numbers—a strangely limited structure in an otherwise powerful module. Transactions and audit trail information are critical as you entered. The account is verified as you entered. The account is verified as you entered. The accounts is verified as you entered to total. General Ledger contains a churrie total. General Ledger, and a trial balance. All financial statements must be created with they writer, a powerful yet easy-to-use program.



Ream of the Accounting System, Version 4.0 Real World Corp. 282 Loudon Rd. Concord, NH 03302 (603) 255-9565 List Price: General Ledger. Accounts Cerb.

available; seven other modules; multiuser version. Requires: 256K RAM, hard disk; condensed type or 132-column printer; DOS 2.1

or later.

In Short: A powerful, flexible package with a proven track record. Usually sold through dealer network. Not copy protected.

OROLE 885 ON FEADER SERVICE CAFO.

AND THE PROPERTY OF THE PROPER

1. Type 15. Let 1 moure date 1745/47
10. Type 15. Archives VI 17 22,536.44
11. Type 16 17. Type 17. Ty

RealWorld Accounting System lets you change information using a query indicator and the help messages at the bottom of the screen.

Wordprocessing w

when ordering. package includes both 51/4" and 31/2" disks.

B 31/2" format available from manufacturer by request, Call us for details.

CP-copy-protected, NCP-not copy-protected SOFTWARE

We only carry the latest versions of products Version numbers in our ads are current at press

Alpha Software ... NCP □Alpha/three 1.0 (dB3 file competible). . . . 223. American Small Business Computers □ProDesign II 2.5 (NCP low price CAD) . . 169. Ansa ... NCP Paradox 2.0 (easy-to-use database) 419. Application Techniques ... NCP BPizazz 2.0 (see what your printer is missing) 45.

Ashton-Tate ... NCP □dBase III Plus 1.1 (the standard) 399 □Framework II 1.1 (integrated excellence) . 399. ☐MultiMate Advantage II 1.0 299 Bible Research ... NCP THE WORD 3.1 (KJV, Bible on Disk). . . . 159 THE WORD 3.1 (NIV, Bible on Disk). . . . 159 Borland International ... NCP □Numerical Methods Toolbox 1.0 59

□Turbo Lightning 1.0 (speller, thesaurus) . . . 59

□Turbo C 1.0 59 □Turbo Pascal 3.0 w/BCD & 8087 support 59

Breakthrough ... NCP

Timeline 2.0 (project managament) 259. Broderbund ... CP Print Shop (banners, signs, etc.) . . . Print Shop Companion (tools for Print Shop) 33. Graphics Library 1 or 2 (for Print Shop) ... 22. Computer Associates ... NCP ESpreadsheet Auditor 3.0 (check your work) 89. ■SuperCalc 4 1.1 (includes Sideways) . . . 299.

Core International ... NCP Crosstalk Communications ... NCP □Crosstalk XVI 3.61 95. DCrosstalk MK.4 1.0 129. Dac Software ... NCP

PC Connection Software Special through September 30, 1987

MONOGRAM ... NCP Dollare & Sense 3.0

The only worry the average person has about money is that there is never arough Dollars & Sense will allow you to watch your income, expenses, credit card(s), and cash flow, so you can keep better track of what's yours to begin with. Plus, through Sept. 30, with each Dollars & Sense you buy from PC Connection, Monogram will send you absolutely FREE the book Using Dollars & Sense, from Qua Publishing (\$17.95 value)!

Supports up to 120 record-keaping

catagories and 12 checking accounts, and includes 3 sample account templates · Constantly shows running balance in active account

 Supports automatic transactions · Prints checks, reports, and graphs

For the IBM PC, XT, XT286 & AT \$105. Daybreak Technologiaa ... NCP

Gern Desktop Publisher 1.0. 259
Executive Systems ... NCP

DXTREE 2.0 (DOS shell) 5th Generation ... NCP □Fastback 5.14 (hard disk backup) 89. Funk Software ... NCP Generic Software ... NCP □Generic CADD 3.0 (full-featured) 69. Harvard Associates ... NCP Hayes ... NCP

Smartcom II 2.2.... Headlands Communications ... NCP Hilgraeve Software ... NCP DHyperAccess 3.2.....89 Infocom ... NCP Cornerstone 5.2 (powerful database) 59

Intersecting Concepts ... NCP □ Display Master 2.04 (for EGA systems). . . 39

For the IBM-PC (XT & AT) Exclusively.

Javelin Software ... NCP □Javelin 1.1 (more than a spreadsheet) . . . \$69

Lifetree ... NCP □Volkswriter Deluxe Plus 1.0 (an old favorite) 69 □Volkswriter 3 1.0..... Micro Education (MECA) ... CP Micropro ... NCP □Easy Extra 1.5. □WordStar Professional Release 4.0 259

Microrim ... NCP ☐R: base System V 1.1 (with Express). 429 Microsoft ... NCP □Windows 1.04 (includes Write & Draw) 65

⊞Word 3.11 (graphics based) 219 LANGUAGES □Quick Basic 3.0 (newest version) 59.

Monogrem ... NCP Dollars & Sense 3.0 special Nantucket Software ... NCP Clipper (Autumn '86, dB3 Plus compiler) 399.

Nolo Press ... NCP Paul Mace ... NCP □H/Test-H/Format 1.0 (hard-disk tools)......49 Paperback Software ... CP □VP-Planner 1.3 (1-2-3 vers. 1A competible) 57

BWIWriter 1.0.

Personics ... NCP SmartNotes 2.0 (Post-It-like notes) 49. Quarterdeck ... NCP #SeeMORE 1.0

DESQView 2.0 (operating environment)... 79. DExpanded Memory Manager 386 1.0 39 Simon & Schuster ... NCP Webstar's New World Writer 1.04 59 Softlogic Solutions ... NCP Software Carousel 2.0 (everything resident) 35

EPFS:First Publisher . #PFS:First Choice 1.0 (nice program). . . . 109.

Harvard Total Project Manager 2.0. 379 Springboard ... CP Newsroom (make your own newspaper) . . 35 Newsroom+Pro (NCP).....79

Symantec ... NCP Q & A 2.0 (database, word processor) . . . 209.

onders for writers.

Traveling Software NCP	
ELAP-LINK 2.0 (51/4" to 31/2" and back) \$79.	PC Connection
True BASIC, Inc NCP	Hardware Special
□True BASIC 2.0	through September 30, 1987
#True BASIC Libraries each 32.	triough September 30, 1967
Turner Hell NCP	CONTROL DATA CORP 1 year
BSQZ! 1.5 (meke 1-2-3 sheats smeller) 49.	Wren II Series 40 Megabyte Hard Drive
BNote-It Plus (notes on 1-2-3 sheets)	
B4Word 1.0 (edd word processing to 1-2-3) 59.	Like the cold New England winters, this
BCambridge Spreadsheet Analyst 2.02 59.	drive is rugged. The Wren II line is used by
Unison World NCP	numerous OEMs to build complete systems
Newsmaster 1.0	around, and these ere high-quality systems
WordPerfect Corp NCP	that use nothing but the best.
WordPerfect Executive 1.0 119.	 CDC Model No. 94205-51, 51/4°.
■WordPerfect 4.2 (one of the best) 199.	half-height
Xerox NCP	 28 ms average access time (30% faster
Venture Publisher 1.1 549.	than e stock AT hard drive)
TRAINING	 Includes Wrenpak II formetting and
INAINING	diegnostic software, which allows e full
ATI CP	40 megabyte usable partition, or partition
□How to use DOS, BASIC	the drive to suit your own individual
DHow to use Lotus, dBase III Plus each 43.	needs
Individual Software NCP	PC/XT version includes Western Digital
□The Instructor II (with Smartguide) 26.	herd drive controller, AT version uses AT hard/floppy controller
□Professor DOS	Also includes all necessary cables,
□Smartguide (mem. resident DOS reference) 15.	mounting hardware, and instructions
□Typing Instructor II	
Microsoft NCP	For the IBM PC or XT

EDUCATIONAL

Typing Tutor IV.....

Designware ... CP (requires CGA)

Stone & Associates ... CP (regs. CGA)

My Letters, Numbers, Words (ages 2 to 6) . . 27.

BAlgebra 32

RECREATIONAL

Mean 18 (great golf game). 29.

infocom ... NCP

Spelicopter (eges 6 to 10)

BCalculus

Accolade ... CP (requires CGA)

Electronic Arts (requires CGA)

True BASIC, Inc. ... NCP

Blue Chip ... CP

Starflight (NCP) . . .

Bureaucracy

Enchanter

Millionaire II......

Hayden Software ... CP

Simon & Schuster ... NCP

Barron'e ... CP

Computer SAT...

(includes controller) . For the IBM AT or XT286 569.

Microleague Sports ... CP Microleague Baseball (requires CGA) 25 Microprose ... CP Microsoft ... CP □Flight Simulator 2.13 (regs. graphics brd.) 32.

Mindscape ... CP Balence of Power (reqs. graphics brd.) . . . 30. 1Step Software ... CP (requires CGA) Golf's Best (Pinehurst or St. Andrew's) 19 Parlor Software ... CP BBridge Parlor (best Bridge simulation) 49 Sierra On-Line ... CP FLeisure Sult Larry (requires CGA). 25. Simon & Schuster ... CP

Sphere, inc. ... NCP Orbiter (Shuttle simulation, requires CGA) 27. Sublogic ... CP

1-800/243-8088

Star Trek/Prometheen Prophecy 27.



PC Connection 6 Mill Street 400M Marlow, NH 03456 603/446-3383

XOR ... NCP NFL Challenge \$79. HARDWARE

Manufacturer's standard limited warrenty period is listed after each company name. Some products in their line may have different warrenty nerioris

AST Research ... 2 years All boards listed (except Piggyback, I/O Mini 2 & Hat Shot) include a FREE copy of DESQVew. HOLSON INCLUSE & PIECE CUPY OF DESCRIPTION

125.

SixPakPlus 384k C/S/P (fully populated). 199.

SixPakPremium 256k C/S/P
(upgrades to 1 Mb or 2 Mb w/Piggyback). call Advantage Premium 512k S/P (upgrades to 1 Mb or 2 Mb w/Piggyback) . . . call RAMpagel 286 512k (upgrades to 2Mb) . . . call Hot Shot 286 ... AST Premium series boards and RAMpage!

boards support EMS and fully support EEMS. Amdek ... 2 yeare Video 310A Amber monochrome monitor 139. Video 410A Amber monochrome monitor 169. Compucable ... lifetime Smartmodem-to-AT cable (9 feet). 19. 15-foot Paratlel Printer cable 27. 2-Position (AB switch box, 2 yr. warranty). . . 39. 3-Position (ABC switch box, 2 yr. warranty) . . 65. Cuesta ... 1 year Datasaver 400 Watt (backup power unit). . 499. Curtis ... lifetime ACCESSORIES Printer Stand . .

CABLES Smartmodem-to-PC Ceble (9 feet) 17 Printer-to-IBM cable (9 feet) 17. SLIBGE SLIPPRESSORS Diamond (6 outlets) Ruby (6 outlets: EMI/RFI filtered; 6 ft cord) . . . 55 Ruby-Plus (wFAX & modern protection) . . . 65 DCA ... 1 year Epson ... 1 year EX-800 printer (80 column, 300 cps) 367 EX-1000 printer (136 column, 300 cps). . . . 497 FX-86e printer (80 column, 200 cps) 307 LO-800 printer (80 column, 180 cps) 437 LQ-1000 printer (136 column, 180 cps) . . . 549

LQ-2500 printer(136 column, 324 cps).... 837 LX-800 printer (80 column, 180 cps). 167 Everex ... 1 year Evercom II 1200 Internal Modern 119 Evergom II 2400 Internal Modern. 199. 5th Generation ... 6 months

Hollywood Hijnx Hitchhiker's Guide Leather Goddesses of Phobos . . . each 25

For the IBM-PC (XT & AT) Exclusively.

800/243-8088.

Hayes 2 years
Smartmodem 1200 \$299.
Smartmodern 1200B (with Smartcom ii) 299.
Smartmodern 1200B (no software) 265.
Smartmodem 2400
Smartmodern 2400B (with Smartcom II) 449.
Hercules 2 years
Hercules Color Card (CGA)
Hercules Color Card (CGA)
Hercules Incolor Card (includes RAMfont) call
Intel 5 years
Above Board PC 64k (upgrades to 2 Meg) 239.
Above Board PS-PC 64k C/S/P 259.
Inboard 386/AT /requires cable inst. kit) 1299.
Inboard Cable Installation Kit 139.
Aboveboard 286 512k
Aboveboard PS/286 512k S/P (for PC, XT, AT, XT286)
(for PC, XT, AT, XT286)
80287 (for IBM-PC AT & XT 286)
80287-8 (for 8 MHz AT compatibles) 249.
80387 499
Kensington Microware 1 year
Masterpiece
Masterpiece Remote 110
Masterpiece Remote
Printer stand 17.
key tronic 90 daya
101 Keyboard (enhanced layout, 3 year wrnty.) 119.
5151 Keyboard (dek.me) 169.
Kraft 1 year
3 Button Joystick
Microsoft 1 year
Microsoft 1 year PS/2 Mouse 6.1 (with Show Partner)
Bus Mouse 6.1 (with Show Partner)
Bus Mouse 6.1 (with Show Partner)
Mach 10 (includes Windows and mouse) 369.
Migent 1 year
Pocket Modern (ext., 1200 baud, w/softwere) 169.
Mouse Systems lifetime
PC Mouse (with Pop-up Menu software) 99.
Bus Mouse (with Pop-up Menu software) 109
PC Paint Plus 2.0
Multisync monitor (EGA compatible) 547.
GB-1 /supports 640 x 480 resolution)
NSI Logic 3 years
Smart EGA Plus
Oblidate funer
Okideta 1 year Laserine 6
Advanced Personality Module
Orchid Technologies 2 years
Tiny Turbo 286
Tiny Turbo 286
Jet 386 (includes cable kit)
RAMquest (for PS/2 models 50/60 2 Meg) 699.
Practical Periphersis 5 years
Manufacture of the Constitution of the Constit
Microbuffer Mini (parallel print buffer w/128k) 79. Microbuffer Inline (par point buffer w/256k) 149.
Princeton Graphics 1 year
MAX-12E Amber monochrome monitor 179 HX-12E (FGA compatible)
HX-12E (EGA compatible) 499
-
Fo

Haves ... 2 years

ioshiba 1 year	
2321 SL printer (80 col., 216 cps, w/tractor)	\$549.
P351 S/P printer Mod 2 (136 col., 288 cps)	939.
Seng Labs 1 year	
VA 480 (supports 640x480 res., includes D	k
rialo II & drivers for Autocad & Lotus 1-2-3)	349
/ideo 7 2 years	
/EGA Deluxe (supports 640x480)	329.
DRIVES	
Control Data Corp 1 year	
O Meg (formatted capacity) Int, Hard Drive	or
BM AT or XTs	pecia
O Meg (formatted capacity) Int. Hard Drive	for
BM AT (wWren Manager II software, 28 ms)	997
OMEGA 1 year	
Bernoulli Box 20 Meg w/PC2 card	
0 Meg cartridge	. 57.
Bernoulli Box 40 Meg w/PC2 card	. cal
Meg cartridge	. 79.
C2B (Bootable) Card	229
Mountain Computer 1 year	
Drive Card 20 Meg (80 ms)	479.
Drive Card 30 Meg (78 ms)	569
Dual 20 Meg Internal Bernoulli 51/4"	
includes PC2B card)	1949
51/4" Cartridge	. 75
10 Meg Internal Tape Backup (for XT or AT)	379
Seagate 1 year	
REE PCTV® Hard Drive Installation Tape wi	
curchase of either of the following Seagate of	77405
or the IBM PC (not for AT). Specify Beta or V.	HS.
20 Meg Internal Hard Drive (w/Western Dig.	
controller and cables, 65 ms)	329
30 Meg Internal Hard Drive (w/Adaptec RL)	

31/2" Internal ND-354-A Disk Drive (720k) ScribeCard 30 Meg (68 ms). 479. MEMORY

TEAC ... 1 year PC, XT 360k Drive (51/4" half-height) 109.

. 117.

135

AT 30 Meg Internal Hard Drive (w/cables &

PC, XT 360k Drive (51/4" half-height).

AT 360k Drive (51/4" half-height) . . .

Toshiba ... 1 year

64k Upgrade Set (150 ns, set of 9) call 256k Upgrade Set (150 ns, set of 9) call 256k Upgrade Set (120 ns, ser of 9) call

1-800/243-8088



6 Mil Street 400M Marlow, NH 03456 603/446-3383

DISKS	
All disks have a lifetime warranty.	
DS/DD Disks for the PC & XT (40 TPI).	
Fuii MD2D (10 disks per box)	12.
Verbatim Datalife (10 disks per box)	15.
Maxell MD-2 (10 disks per box)	15.
DS/High Density Disks for the AT (96 TPf).	
Fuji (10 disks per box)	24.
Verbatm (10 disks per box)	
Maxel (10 disks per box)	
31/2" Double-sided Diskettes (720k)	
Sony (10 disks per box)	21.
Maxell (10 disks per box)	
31/2" High-Density Diskettes (1.44 Meg)	
Maxel (10 disks per box)	59.
Fuji (10 disks per box)	

Fuji (10 disks per box)	
MISCELLANEOUS	
CompuServe CompuServe Information Service	
Membership Kit	١.
Computer Toolkit	
OUR POLICY	

 We accept VISA and MASTERCARD. No surcharge added for credit card ord · Your card is not charged until we ship. · If we must ship a partial order, we never charge freight on the shipment(s) that complete the order · All U.S. shipments insured; no additional charge APO/FPO orders usually shipped 1st Class Mail. Allow 1 week for personal and company checks to clear UPS Next-Day-Air available COD max \$1000 Ceets or certified check · 120 day limited warranty on all products . To order, call us anytime Monday thru Finday 9:00 to 9 00, or Saturday 9 00 to 5:30. You can call our busin offices at 603/446-3383 Monday through Friday 9:00 to 530

SHIPPING

Note: Accounts on net terms pay actual shipping. Continental US: · For monitors, printers, and hard drives, add 2% for UPS ground Call for UPS 2nd-Day & Next-Day-Arr. For computers, pay actual charges. Call for UPS 2nd Day & Next-Day-Ax

· For all other terms, add \$2 per order to cover UPS Shipping For such items, we automatically use UPS 2nd-Day Air at no extra charge if you are more than 2 days from us by UPS ground.

 For monitors, printers, and hard drives, actual UPS Blue charge will be ackned. For all other terms, acid \$2 per order

Alaska and outside Continental US: Call 603/446-3383 for information

For the IBM-PC (XT & AT) Exclusively.



PC Pectorals.

The ripple effect.

• n the heavyweight town of Marlow, NH (pop. 547) we've found it takes a big grin, true grit, and the occasional bulging bicep to outmuscle the competition. That's why we don't try to load you down with products that can't carry their weight.

We know that using a PC (XT or AT) can be a real burden when you don't have the right add-ons, software, or accessories. Fortunately, the strapping hunks and hunkettes on our sales force know the tricks and trickettes to keep the scales tipped in

your favor. Pumping ions.

Did you ever think about how many electrons go scrambling in different directions every time you touch your keyboard or mouse? And it gets even more complex when you start loading up your mischievous little micro with various doodads and doohickeys. Don't it?

Well, sweat thyself not. When those confusing instructions and error messages make you feel like some silicon strong man just kicked sand in your face, give our tech heavies a call. They know which keystrokes, cables, or configuration you need to give the old heave-ho to virtually any micro mayhem.

Keep your head above water!

As you can see, our muscular mascots tend to show off a bit when they hit the beach each summer. And so should you! With the PC Connection inflatable raft. From the company that always catches your drift. It's free to anyone who places an order of \$500 or more

between now and September 30. Just call 1-800/243-8088 or 1-603/446-3383. M-F 9:00 to 9:00: Saturday to 5:30. If you're planning to visit, call ahead to make sure what you want is in stock.



For the IBM-PC (XT & AT) exclusively.



PACKAGING TAX ADVANTAGES

Price Waterhouse's Tax Management System.

Five years ago, the "Big Eight" accounting firm Price Waterhouse had three people working in its Corporate Computer Assisted Tax Services group. The unit produced less than \$400,000 in revenues.

The growth, since then, has been meteoric. The tax services group, which operates out of Price Waterhouse's Chicago offices, now is producing more than ten times the revenues it did in 1982. Total revenues this year are expected to reach about \$6 million.

At the heart of the group's expansion is the development of Price Waterhouse's unique software programs comprising the firm's Tax Management System (TMS).

To handle the workload, the staff has been increased to 70 people, most of them equally comfortable working with information systems managers or with accounting and financial officers in client companies.

Steve Desmond, partner-in-charge of the Computer Assisted Tax Services unit at Price Waterhouse's Chicago office, said TMS is a response to:

- The complexity—despite government attempts at reform-of tax law and accounting principles dealing with taxes. ■ The proliferation of microcomputers
- in the corporate environment. ■ The lack of comprehensive software programs dealing with anything other

than tax preparation. The four TMS modules are Domestic Tax Management System, International

Tax Management System (ITMS), State Tax Management System, and Fixed Asset Management System.

TMS is built on a central database. Ontional calculation modules are designed to handle almost any phase of a corporation's tax accounting and reporting requirements. TMS draws information and makes entries throughout a fully integrated system.

The TMS database and Domestic Tax Management System is available for a base licensing fee of \$10,000. Maintenance support is optional at a cost of 50 percent of the license fee, or \$5,000 in this instance. The database includes organization and financial information. flexible charts of accounts, and trial balance information. The license fee for the International Tax Management System (ITMS) database is set at \$2,500, with various programs for specific form preparation and calculation functions available at fees ranging from \$1,000 to \$10,000. For the Fixed Asset Management System, the fee is set at a flat rate of \$5,000 All the major TMS components can be

combined with utility and data transfer programs that are also written and sold by Price Waterhouse; these carry fees of \$1,000 to \$2,000. Common features of the four major

TMS components include: A completely PC-based system.

- A database of information common to all its management systems.
- Pop-up windows for streamlined use. ■ Ability to handle unlike charts of ac-
- counts. ■ Complete audit trails.
- Modular design. Immediate or batch printing.
- Customized reports.
- Full tracking of all usage by date. time, and user. Employee training, which typically

takes 1 to 4 days depending on the program, is an option and costs \$375 per person, per day. Training generally takes place in Chicago or New York. For a fee of \$2,500 per day plus expenses, Price Waterhouse will travel to a corporate site for training.

OTHER MODULES, FEATURES Tax Calculation and Decision Support/Planning modules also are provided for analyzing the benefits or detriments associated with changes in state tax calculations

The fixed-asset component can be used as a standalone module, or it can pass book-tax differences and tax calculations to other modules. Particularly significant is the flexibility to allow such functions as dual books for state calculations, which simplifies multistate reporting for states adopting or not adopting Accelerated Cost Recovery.

Other modules, at additional costs, perform specific calculations and may be added as operations expand. Among those are MAXIDISC, which performs calculations for Domestic International Sales Corporations (the DISC in MAXI-DISC), another module that calculates commission, transfer price, and distributions; and MAXIFSC, which performs calculations for Foreign Sales Corporations. Other modules also calculate Subpart F income, foreign tax credit limitations, and deemed-paid credits. A new TRA 86 program calculates implications of international provisions of the Tax Reform Act of 1986

ITMS performs U.S. tax calculations for international operations of U.S.based corporations and their foreign subsidiaries. The basic database includes allocations and apportionments calculations under the federal section 1.861-8 requirements.

Reports can be designed for budgets, financial projections, provision work, and supporting schedules for IRS forms. It makes short-year or multiple-period projections easily accessible.

Other TMS features include:

■ Workpapers on Financial Statement Tax Provision with the new Exposure Draft accounting for income taxes; estimated tax, which includes safe harbor provision of temporary regulations; Provision to Return Reconciliation; and Revenue Agent Review Analysis.

 Adjustments—made automatically for reclassifications. Schedule Ms and intercompany eliminations to produce final tax balances—are indexed and stored on-line. TMS displays excess credit/debit balances and warns the user of out-ofbalance workpapers. Recurring entries are carried over from period to period. Provision, tax return, and revenue agent review; automatic posting of common state tax differences; unitary method canabilities: and user-defined bases for alternative methods of apportionment (revenue miles, airline miles, pipeline miles, and so forth). It has the flexibility to accommodate different methods of apportionment for various industries. -Richard Papiernik

Richard Papiernik is a business reporter for The Miami News.

WATCHING THE BOTTOM LINE

Keeping a close watch on the books is a 138-year-old tradition at Price Waterhouse but now the "Big Eight" accounting firm is reaching into other areas as well.

Make no mistake—accounting is Price Waterhouse's mainstay. Founded in London by accountant Samuel Lowell Price in 1849, the firm was already an established auditing house when Edwin Waterhouse joined it in 1865. Some 25 years later Price Waterhouse opened its first office in the United States-part of the British invasion of highly regarded London auditors who kept the books on the young, rapidly industrializing nation.

Today, some 400 Price Waterhouse offices employ more than 30,000 workers in 99 countries and territories around the globe. The firm's world headquarters remain in London, although there are separate national offices in each country in which it does business.

The U.S. branch of Price Waterhouse, headquartered in New York City, brought in more than \$742 million in revenues in 1986. Price Waterhouse earned more than \$1.5 billion worldwide the same fiscal year.

One of the nation's "Big Eight" accounting firms. Price Waterhouse ranks as the number-one auditor for Fortune 500 companies. However the firm's attention is also attuned to smaller, growing companies, which it reaches mainly through its Consulting Services groups. The Price Waterhouse Consulting Services groups are part of a national network of more than 1,800 professionals who have given advice over the years to everyone from farmers to foreign governments. Seventy-five percent of these consultants have some systems analysis experience. In addition, the groups have specialists in such diverse fields as publishing, real estate, airport management,

and automobile manufacturing. Typically, Price Waterhouse consultants, like all consultants worth their salt. spend considerable time sizing up the needs of an expanding company in search of accounting systems that deliver accurate, timely information. Price Waterhouse then suggests an appropriate system (hardware and software) and custom designs it to simplify inventory and cost reporting. For instance, a production tracking program might be designed to tell a manufacturer the cost of each processing step from a product's inception through packaging and distribution. Another program might identify individual buyers to track the product for quality

control. Yet, the accounting firm's consultants don't limit themselves to computer and

software advice. Other Price Waterhouse Consulting Services groups have helped CEOs of major corporations with strategic planning, testing the climate for a merger. They also have advised manufacturers how to price products more effectively and produce them more effi-

ciently. Price Waterhouse consultants have a diverse roster of clients. They have designed an accounting system for the State Department that tracks the cost of operating United States embassies in cities around the world, and they have also developed an automated ledger system for the Ministry of Works in the southeast African nation of Malawi, a former British protectorate.

Notwithstanding the emphasis on diversification, accounting remains the company's mainstay-as it was when Sam Price put quill to ledger during the reign of Oueen Victoria. And just in case you wondered, tax work, which the firm began doing shortly after it was founded. accounts for the second largest slice of the company's business pie.

-Lisa Cardillo Rose

Lisa Cardillo Rose is a reporter for the Cincinnati Post.

General Ledger is geared to the monthend crunch. You can define which reports will be run, which profit center to use, and whether or not to print comparatives and hudgers.

The Accounts Payable module lets you flag a given vendor as "mornal." Hing a given vendor as "mornal." Hing a given vendor as "mornal." The given vendor as "mornal." The payables transactions are based on a voucher number, and you can add regular vouches, cancellations or adjustments to posted vouchers, and checks that don't affect payables. The vendor is verified during entry, and the default distance to the payables of the vendor is verified during entry, and the default discounts and ledger accounts are used unless you override them. Discount and the dates you override them. Discount and the dates you override them also. Although you must use the RealWorld format for your checks. The termittance and check format is well

Receivables can be entered as invoices, credit/debit memos, adjustments, or finance charges. Once entered, you distribute the amounts to various general ledger accounts. The payment screen helps you find the invoices outstanding for each customer, and you can apply all or part of a cheek to an invoice. You can also print a cash application worksheet to help you with the process.

laid out and attractive

RealWorld includes a variety of standard reports including alphabetic and numeric customer lists, invoice and cash receipts lists, agings, commission reports, and history reports.

Version 4.0 brings impressive improvements to a professional product. In it RealWorld added on-line help, multiplecompany processing, improved passwords, and solid documentation with numerous detailed examples of screens and reports. The company relies heavily on its dealer network to furnish user support and training. The company introduces new products regularly and issues updates about once or twice a year. You can receive phone support for a fee. Source code is available, and many add-on packages have been developed. RealWorld will self you the source code with the module for \$1,000 under a licensing agreement. That may be helpful to dealers and users with inhouse support. However, with the Report Writer and Data Bridge, you shouldn't need the code.-Mike Falkner

Software A La Carte

Softmatics International's Software A Lo Carre gives you mainframe features in a PC package. Originally developed for mainframe users, it a shighly sophisticated integrated accounting system. The nine menu-driven modules, which cost \$499.95 each, are chock-full of useful bookkeeping and accounting features—and they run on mainframes, minis, and micros.

Is and micros.

Is any micros.

So the state of the state

System security is excellent, with passwords and log-on codes for all users on the system. The package gives you a great deal of selective control over who can do what to which files

General Ledger account codes are four digits for the main account and two for the subaccount; some large companies may find this form too restrictive. The system tracks monthly figures for each account for the current year and for the previous year, and also budget figures for the current year. Its budget reports compare these different monthly figures. You can enter and apply recurring transactions. The software can support multiple companies or multiple divisions of the same company; it can produce consolidated income or profitand-loss statements for all the divisions.

CUSTOM REPORTS Many reports are standard men users, and a report writing capability is available for creating customized reports. To create a report, you select from either a set of balance sheet options (like "as of current period") or a set of income statement options (like "current versa year-ot-ode", You then specify detail information indicating which accounts the compact control totals, how much lot in dent each line, and so forth. Setting upperst initially a can be quite teddous, but



Software A La Carle
Software S
Software S
International Inc
P.O. Box 591549
Houston, TX 77259.
1549
[713] 486-8004
List Price General Led
ger, Accounts Receivable, Accounts Pay-

able, \$499.95 each. Also available: six other modules, utility program, multiuser version. Requires: 256K RAM; hard disk, DOS 2.0 or later.

In Short: A sophisticated menu-driven integrated accounting system check-full of features, requires accounting plus computer knowledge and skill. Not copy protected, GPOLE 405 ON FRANCES SEMICE CAPO.



Software A La Carte's main menu for the Accounts Payable module illustrates the wealth of features in this package.

FREE...Pertect Monitor Comparison Kit.

Return this card or call today: 1-800-553-0305

YES • I want to preview the most important annovation since the computer • Send my Rit today, including viewfinder and four-color slides NOTE. To receive your FREE Kit, you must complete the information below

Company Name_

Address___ _City

Product usage Business Personal

Application (e.g., Graphics, spreadhsheet, esc.)

Purchase Time Frame

☐ Within 1 month

☐ Within 1-3 months

☐ Within 3-6 months

☐ Over 6 months Purchase Quantity ☐ Single purchase ☐ 2-20 units ☐ 21-50 units ☐ 51-100 units ☐ Over 100 units

What best describes your Recommend Are you interested in a | No | No atvolvement in the purchase ☐ Influence decision? (Check any that apply) Purchase







BUSINESS REPLY MAIL

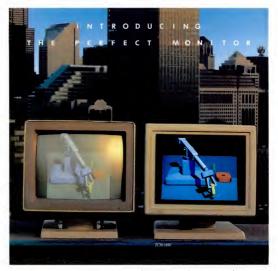
FIRST CLASS PERMIT NO. 87 MT. PROSPECT, IL

POSTAGE WILL BE PAID BY ADDRESSEE

data systems Perfect Monitor Program P.O. Box 7618 Mount Prospect, IL 60056

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES





When Zenith Invented The Perfect Monitor The Industry Took A Giant Leap.

In the harsh light of day, no other monitor compares with Zenith's Perfect Monitor. The breakthrough of flat technology has redefined the monitor industry forever. The Perfect Monitor will redefine your expectations with one look.

50% brighter. Vastly enhanced contrast. Colors, richness and highlights that leap off the perfectly flat screen. Eyestrain and glare are virtually unheard of. Backward and Forward Compatibility. The Perfect Monitor is compatible with IBM's new Personal System/2* computers. And with Zenith's Z-449 Video Card, it accommodates Zenith PCs. plus other AT and XT compatible PC's.

FREE...the Perfect Monitor Comparison Kit. To preview Zenith's new perfect monitor, send for your FREE Kit* which includes a viewfinder and 4-color slides. Or if you can't wait, call today: 1-800-553-0305.

*Offer expires 12/31/87.

Personal System 12 is registered trademark of IBM Corp.



© 1987, Zenith Data Systems

To get the most out of Software A La Carte, you have to know your accounting.

once it's done, the program will then produce the reports quickly anytime you request them.

quest them.

The full-featured Accounts Payable module accepts prepaid and unpaid invoices, allows payment by either handwritten or computer-printed checks, and
handles automatic generation of recurring
payables. For each vendor, you specify
entrems (due days, discount days, and so
forth) and whether the module should issue
of the property of the property
entry of points to select which invoices the
program should person and
program should person
program program
program program
program program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program person
program per

Besides printing checks and 1099 forms, Software A La Carte can print vendor labels and accounts payable reports in various levels of detail, sorted in various ways, to provide different analyses. The check reconciliation feature tracks cleared and uncleared checks and checking account balances. But the Accounts Payable module lacks a recort-writine camability.

Software A La Care's Accounts Recivable module is an open-term system that permits you to enter invoices and then enter transactions later against each voice; to specify payments, reddit or debit memos, cash or credit card payments; and to make other adjustments. The program tracks the invoice until the balance on the invoice is zero. It can use various aging categories and methods for printing different invoice fromats.

Additional modules include Payroll, Bank Reconcilitation, Inventory, Order Entry, Sales Analysis, and Mailing List/ Sales Tracking Softmatics also offers a software development tool to enable a programmer to change the system's operation. This \$1,995 tool is presumably for value-added reselters who need to customvalue-added reselters who need to customize the software for a particular company.
Installing and customizing Software A

La Carte requires investing considerable time, money, and effort. The payoff is a sophisticated accounting package for the sophisticated user.—John J. Xenakis

Solomon III

At \$795 per module, the Solomon III accounting series from TLB is one of the more expensive and most capable accounting systems on the market. Installation is a snap with Solomon III's

menu-driven Install program. Type "A:Install" and you can load Solomon's System Manager, General Ledger, Accounts Payable, Accounts Receivable, and Production Database in less than 15 min-

utes.

The Install program creates all necessary directories, subdirectories, and DOS paths automatically. A user with virtually no knowledge of DOS can load and operate it. Even the backup and restore commands are mean driven.

The system prompts you through setup. If you get out of sequence, it gives you a meaningful error message. For instance, if you try to enter journal entries prior to completing the General Ledger setup screen, the system tells you "this selection is invalid until all required fields have been entered in the 01-95 setup screen."

General Ledger gives you a flexible account/subaccount structure that allows up to six prime account characters and six subaccount characters. Solomon recommends you follow AICPA standards when setting up your prime account numbering scheme (Assets = 1000, Lishilities = 2000, Income = 3000, and so on, It gives you four char-fo-account types (corporate, single proprietorship, limited partnership, and subchapter). Each one includes ship, and subchapter) Each one includes an on-AICPA chart of accounts, you can easily modify the 14 standard financial rouse, you can easily modify the 14 standard financials to your account structure.

The General Ledger report writer offers an unlimited number of custom financial report formats and lets you define headers, footers, columns, rows, totals, and subtotals, as well as whether to print in detail or summary on a line-by-line basis. As with each module, it includes extensive wild-





List Price: General Ledger, Accounts Receivable, Accounts Payable, \$795 each. Also available: ten other modules; System Manager, \$95; Tutorial, \$149; multiuser version. Requires: 384K RAM; 20-Mbyte hard disk; DOS 3.0 or later.

DOS 3.0 or later.

In Short: Easy to install and use, with extensive on-line help and excellent documentation and support. Expensive but worth it to anyone who wants a full-featured system.

Copy protected.
CIRCLE 687 ON READER SERVICE CARD



Solomon Itl's sophisticated budgeting system lets you enter up to three budgets for each account or subaccount combination. This lets you track and report point year nations, year, future year, or forecasts, and so forth.

How to see VGA for what it really is.



Take this little test. Look at the screen and notice the sharpness of the characters. And the brightness of the colors.

And the name of the standard VEGA Deluxe™

It's a 640 x 480 high resolution graphics standard that IEM thought so highly of they built it into their own new Personal System/2 computers.

But if you've already got a PC or compatible and a MultiSync monitor, then all you need is the \$495 YEGA Deluxe card.

The VFGA Deluxe is a standard that runs every piece of software written for CGA, MINA, Hercules and EGA. And one that, with a free software upgrade, will run future programs written for IBM's VGA, With 16 colors from a palette of 64.

Oh sure, the YEFA Deliune uses advanced surface mount technology, And comes with a two year warranty. And has been the record for numerous awards including Editor's Choice from PC Magazine and the Ultimate Machine from PC Tech Journal. So head down to your nearest Video Seven dealer and see for yourself what high resolution really looks like. Or contact

Video Seven.
The VEGA Deluxe, it'll open your eyes.

The VEAN DELUNE, IT II open your eyes.
Video Seven Inc., 46355 Landing Parkway, Fremont, CA 94538, 1-800-238-0101 VIDEO
(in California, 1-800-962-5700).
We make.



BEDFORD STILL CAN'T MAKE COFFEE

But when it comes to accounting software for small business, we're ideal.

The entire program is contained in one file on one disk. Even the payroll formulas for 50 states are built in, (with no need for user maintained tables).

Bedford comes with two manuals. The User's Guide explains program operation in simple terms; the Accounting Manual serves as a layman's introduction to accounting.

Bedford even includes records of a sample company for ease of use, and learning the program.

As for making coffee...we're still working on it! But for now, some office procedures will still have to be done without the ease and efficiency of Redford software



"One of Bedford's biggest assets is its speed."

- "we rate documentation as excellent "
- " ...an excellent rating for ease of use " " Installing ... will take just a few minutes "
- " ... a near perfect match for many small

companies " InfoWorld, April 6, 1987

Call today! (206) 883-0074

General Ledger

- · financial statements are as current as last entry produces full audit trails
- · entire fiscal year available for reports (any start or finish date) largest balance 20,000,000 closes books automatically at
- Payables/Receivables · uses open invoice method
- · automatically updates, inventory records and general ledger • user can define aging periods · prints invoices, statements and

checks

· both automatic and manual mode · calculates all federal and stata

· uses built in psyroll formulae · no user maintained tables

. five income fields - two are user definable

- +handles vacation pay and advances · six extra deduction fields · three are user definable · automatically maintains
- withholdings payable accounts automatically retains QTD and YTD
- accumulates 940.941 and stata accumulates W-2 data for each

Inventory

- handles state and local taxes posts from receivables and
- up to 999 dems · average weighted cost method · handles edjustments and transfers · automatically flags reorder points

Jobcost

- distribute any revenue or expense to up to 999 projects or profit company's portion of FICA,
- SUTA and Deablifty Insurance produces summary and detail reports for any project or dept
- Program capacity Ledger accounts
- Journal entries . . . No · Vendors . . Transactions.... No Limit
- · Customers. Transactions... • Employees..... • Projects.....
- · Limited by available disk capacity " Limited by available RAM capacity

System Requirements

- Hardware, Requires a minimum of 256K RAM with two disk drives Program will support up to 640K RAM and a hard drive. Not copy
- Computer types: IBM PC and most compatibles using MS-DOS 20 or
- Standard Features · all modules are fully integrated · all reports can be displayed or printed
- · most reports can be exported to Lotus W. ASCII or DIF Nes. Indicates manufacturer's registered
- Til Indicates manufacturer's

©1986 Bedford Software Corporation





carding and masking capabilities, and reports can be printed at any time.

Solomon gives the power user three budget fields per account/subaccount combination, letting you track and report last year's, this year's, and next year's budget all at the same time.

All journal entries are batch controlled. Batches must balance before they can be released for posting. You are given nonrecurring, recurring, manual, and reversing iournal entry types.

EXCELLENT CONSOLIDATION Solomon III's consolidation routine is outstanding. When setting up accounts in the chart of accounts, you are prompted for an account number and an associated consolidation account number. The consolidation



Macola Accounting Software Solomon III

Solomon III's multiple-budget capability, unlimited consolidation options, account masking, wildcarding, and numerous standard financial reports are features not often found in other packages-even though at \$795 per module it is cheaper than many. Easy to install and rich in features, documentation, and support. Solomon III. made by TLB, outdistances the competition unless you expect to go from a single-user to a multiuser

Users who do should consider Macola Accounting Software. made by Macola. It takes little more than Macola's \$99 Run-Time module to install its PC files on a LAN. Macola, which lists at \$795 per module, is a descendant of the MCBA minicomputer package. Macola on a Novell LAN installation (about \$60,000 for hardware and software) gives you functionality equivalent to that of a \$250,000 MCBA installation on an IBM System/36.

account number will default to the account number unless you change it. Each time you run the "Generate Consolidation File" process, the system automatically notes the balance of each account record. The next time you run the process, the system compares the old balance with the new and records the incremental difference on the consolidation file. You may run the

consolidation process as often as you like

and at any time during the period-not just

at its end. Subaccounts can also be consoli-

dated Accounts Payable lets you enter vouchers, adjustments, manual checks, and void checks. You may select vouchers for automated check printing by pay date, individual reference number, or specific vendor ID. Solomon lets you enter contract-type payments and gives you the ability to track and print 1099 forms, as well as containing an impressive vendor master file that includes default terms and a default expense

account for each vendor. Accounts Receivable can be used just with General Ledger or integrated with the other modules. It lets you enter hand-prepared invoices, adjustments, and cash applications. Customers may be set up as open-item or balance-forward and individually flagged to receive statements, dunning messages, and finance charges. Accounts Receivable includes item-by-item or oldest-item-first application of cash received, a recurring invoice maintenance screen for the entry of contract-type receivables, and user-defined aging categories selected for each customer.

Documentation is fully indexed and easy to use. On-line help text, nearly identical to the documentation, is touch sensitive. For a fee, TLB will customize screens and reports. TLB offers end-user training classes each month throughout the country, and a number of local and national CPA firms also teach Solomon III. For a fee, TLB supports Solomon III with version updates and enhancements, user bulletins, payroll tax table service, and unlimited telephone consultation

Solomon III has few rivals in functionality and ease of use. It is powerful, flexible, efficient, and a must for anyone looking for a full-featured, well-supported, high-priced accounting system. -Jeffrey Williams

TCS

TCS is a study in inconsistency and dichoromy. This \$795-per-module package, from TCS Software, is strong in some areas, weak in others. Efficient and tedious. Pleasing and annoving. Advanced and ar-

Age is one reason. TCS is a spin-off of the original Peachtree accounting software that IBM put under its private label when it introduced the first PC. Remnants of this heritage still show up in TCS: you must enter credits as minus numbers, editing is difficult, prompts are few and far between, on-line help is nonexistent, lowercase responses are unacceptable, the tiresome-to-read documentation is not typeset, and more.

Although the TCS General Ledger has excellent comparative reporting capabilities, it lacks ease and flexibility in formatting financial statements. The system allows for only 12 periods but maintains totals for a rolling 12 periods on file. It provides formats for comparisons between any two quarters or two fiscal periods, as well as offering an unusual spreadsheetlike format that presents any consecutive 6 periods side by side. Comparisons against budget with both dollar and percentage variance are also available, but all statements must remain the same from top to hottom.



List Price: General Ledger, Accounts Payable. Accounts Receivable, \$795 each; also avail

able: five other module: Requires: 256K RAM: two disk drives or hard disk: condensed type or 132-column printer: DOS 2.0 or later

In Short: An unsophisticated, though serviceable, accounting package. Outdated and firmted when compared with others in its price range. Not copy protected



■ ACCOUNTING

10	Name /	Phone	Rest	ests		Lost Check			
HOT114 HO	EL LINENS	61-372	-6189 YTO Payer Corr. Bal	. 5	2.00 fm1.				
		** (lecks Writtee - F	II Periods					
Chi Number	Chi Date	Type	Invaice Number	Inv Orto	Disc Ant	Not low Aus			
322444 01	18/11/87	Void	1 55% 608 TO 55%	18/84/87 11/82/87 11/82/87	8. H	1,420.14			
				s for chec		6,229 39			
		Tes	el checks all per	ieds Cless	veids)	0.00			

Press ACTION to continue or Q to quit ...

TCS lets you look up a vendor's check history, including contact phone number, total amounts owed, and last check payment information, while online.

Creating the chart of accounts is a very tections task; you must enter master accounts for every line to be printed and subcounts for every line to be printed and subcounts for every account/subcount to be posted. You must also enter budget and prior-year data at this time, because TCS lacks full-screen editing. And you cannot prevent journal entries from being created when you are entering initial documents, so you must delete or offset the results lat-

Account numbers consist of a ten-digit field, with at least three digits for the main account and no more than seven for the sub-account. TCS can handle up to 1 billion entries, with transactions in nine journals, including Cash Roceipts, Cash Disbursements, Auto-Repeating, Auto-Reversing, Prior-Period, and General. While TCS can keep multiple companies in separate files, it has no way to consolidate them.

Entries are not date or even period sensitive. Only one period is open at a time, and TCS books all entries into that period unless they were entered using a special prior-period journal. Therefore you must carefully coordinate period-end cutoffs between modules. Detail from prior periods is not available on-line.

If an account is out of balance or an invalid account number condition exists, TCS will not allow posting. But since TCS does not validate the account numbers for default data in the subsystems, it may reject many transferred transactions.

PAYING VENDORS Accounts Payable handles routine functions like prepaids, partial payments, manual checks, voids, aging, and recurring vouchers. But it can

accommodate a maximum of only eight distributions per invoice and fails to include a description field; subsequent auditing is therefore extremely difficult.

The vendor master files maintain a minimum of information. TCS cannot compute due dates, discount dates, of discount amounts during transaction entry. In many cases you have to compute and enter discounts manually. Also, since TCS does not enter line items on a voucher, you cannot use the system to proof a voucher.

On the plus side, the module includes an excellent check history report and a helpful query-wendor feature. It also handles open-credit application well, allowing on-screen scanning of vendors and selective application to vouchers.

Accounts Receivable, the most flexible of the basic modules, can run alone or interfaced to the Inventory Control module, with or without interfacing to the Sales Order module. The module can print invoices, but it must print each one before entering the next one.

TCS also includes two very advanced modules: Q*LINK, a spreadsheet interface that uses English-like commands to create. WKS, .WRK, and SYLK files, and SIMPLE, a friendly database management system that allows not just customized reporting and queries, but database maintenance of accountine records.

While these additional modules are attractive, the basic TCS accounting modules do not match up to the performance of others in their price range. They lack sophisticated features and documentation, as well as general ease of use.

—Kenneth J. Hillty



SAMSUNG

provides compatibility and beyond





SAMSUNG S-286 (Base System) includes:

- . Intel 80286-8 CPU with 8 Expansion Slots
- 1Mb Standard RAM Memory On Board (100nS Chips)
- Combined 2 Floppy/2 Hard Disk Controller Card (Western Digital WA2). . 200 Watt Power Supply 230/115 V Switchable.
- . Clock Calendar with Battery Back-up (Rechargeable Battery). · 6 or 8MHz Clock Speed (Switch Selectable).
- . Wait or No Wait Memory Access (Switch Selectable).
- . 1.2Mb Floppy Disk Drive.
- 2 Serial Ports and 1 Parallel Port (Built-in Motherboard).
- . Enhanced 101 MAXISWITCH* Keyboard. · Push Button for Hardware Reset. · Hardware Reference Manual
- Awards ROM BIOS (100% Competible and Faster).
- . Landmark CPU Test Shows 10.3MHz at 8MHz on 0 Wait State. * One Year Complete Warranty Parts & Labor. * FCC/UL Approved.
- S-286 Monochrome System
- . Includes Base System (Shown Above). Video-7™ MGA Card

 - With 20Mb Seagate ST-225 1/2HT 65mS......\$1650 With 30Mb Seegate ST-4036 Full HT 39ms.......\$1870

OPTION	AL PRODUCTS
Samsung 12" Amber Monochrome Monitor with Tilt and Swivel Base	Samsung 14" EGA Monitor
Video-7" VEGA Deluxe EGA Card	
65mS Access Time	
Seagate ST-4038 Full HT 30Mb Hard Disk Drive 39mS Access Time	Chinon 360K Floppy Disk Driv Chinon 360K Floppy Disk Driv

TO ORDER IN CA CALL TOLL FREE TECH SUPPORT & INFO 800-543-8868

S-286 EGA System

· Includes Base System (Shown Above).

Samsung 14" EGA Monitor (640 x 350)

 Video-7" VEGA Deluxe Extra Hi-resolution EGA Card. With 20Mb Seagate ST-225 1/2HT 65mS...

With 30Mb Seagete ST-4038 Full HT 39mS.....

(408) 737-8585





\$2110

\$2330



Saturday 8:00 am - 3:00 pm (PST)





LOOK WHAT THEY'VE DONE

Everything they could think of.

Who are they? Over 100,000 computer users who have discovered a truly unique data storage solution, The Bernoulli Box.® Over 100,000 users who have found hundreds of ways to improve their data management, growth, security and flexibility using the Bernoulli Box and its removable 10- or 20-megabyte disk cartridges. Over 100,000 users like you.

BANKING:

A credit firm that supplies informution to banks employs

Bernoulli Boxes to work with smaller banks and credit unions. Credit requests are controlled on individual cartridges, making it easy to keep track of information and disperse it to the appropriate users. This

unique approach to database management uses cartridges as electronic file cabinets, combining the best of physical and electronic data management.

ACCOUNTING:

A Big Eight accounting firm does extensive tax preparation and in-depth financial analysis, and maintains audit trails utilizing

A FFW OF OUR BEST CUSTOMERS. American Express Amoco Oil

Bank of America Blue Cross/Blue Shield BERNOUL Chase Manhattan Rank Coca-Cola General Foods Harvard University Lockheed Lotus Development

Merrill Lynch Mobil Oil Pacific Northwest Bell RCA TRW Union Carbide

U.S. Army, Navy, Air Force

Its large 10- or 20megabyte capacity provides adequate storage for such apnlications and security for each client. Instead of tving up the firm's mainframe system with heavy number crunching, accoun-

the Bernoulli Box.

tants download client information and data onto Bernoulli Cartridges and develop the client analysis at individual PC workstations.

MANUFACTURING: An appliance manufacturer with ma inventory manages its large databases on Bernoulli Boxes. As parts and inventory lists are up-



distributors are kept current by sending them copies on cartridges. With databases stored on individual cartridges, the company can more easily control large amounts of data and rapid data growth, an ideal application for the Bernoulli Box.

PROGRAMMING: One of the largest software

developers in the U.S. uses Bernoulli Boxes to manage enormous amounts of software source code. Programmers record all the source code for an application on one cartridge, make backup cartridges for protection. and work directly from a "working" cartridge. This allows them to modify code or develop revisions on multiple cartridges, without fear of damaging the original source code. which is safely



stored on the "backup" cartridge.

GRAPHICS: An architect in Chicago uses over 40

Bernoulli Cartridges a year archiving lengthy architectural designs generated on a CAD system. Using a Bernoulli Box gives

him unlimited storage capacity, plus the nortability to take cartridges with him when he meets with clients and contractors (many of whom also use a Bernoulli Box). This fast growth is a powerful benefit of Bernoulli Technology,™ whether for CAD, graphics or desktop publishing.

GOVERNMENT CONTRACTORS:

efense contractor that needs total security on classified projects uses Bernoulli Boxes for fied data can be stored on hand-carried

data management. Large amounts of classi-



WITH THE BERNOULLI BOX.

Bernoulli Cartridges which are secured in vaults when not in use. And specific pieces of data can be copied onto cartridges, rather than giving users access to an entire database of sensitive



PUBLIC UTILITIES:

20+20

A utility company in one Western city uses CAD software and Bernoulli Boxes to keep track of power and water lines. The company has divided the city into quadrants, storing the utility mapping for each

quadrant on a single cartridge. Copies of cartridges can be quickly made to allow several people

to work on different projects in the same quadrant at the same time. And cartridges can be easily archived for historical reference.

RECORD KEEPING.

A medical insurance carrier v offices worldwide must keep track of an enormous number of records for millions of claimants. The company uses Bernoulli Boxes which allow easy access to information, infinite storage capacity and a simple system for database management of archival data. Individual offices use cartridges to undate critical information on a timely basis and send updates to

the company's central database. WHAT MAKES THE BERNOULLI BOX FLY?

In the truest sense, it is the remarkable Bernoulli Technology™ that makes the Bernoulli Box fly. When a Bernoulli Disk spins inside the Box, it literally "flies" beneath the read/write head on an air bearing. Any disturbance that might cause a normal hard disk to crash the head into the data simply causes the Remoulli Disk to temporarily fall safely away from the head. The air flow also purges contaminating particles from the disk.

What about value? Of course, it takes more than breakthrough

technology to make a product worth buying. With its new competitive pricing and unique features like built-in backup, the Bernoulli Box simply gives you more for your money than other storage options.

Expandability, When you buy a Bernoulli Box, you buy unlimited data storage. When one 10- or 20-megabyte cartridge is full, you just put in a new one. For a fraction of the cost of a new hard disk

Portability, With a Bernoulli Box, sharing data is as easy as removing a cartridge and carrying it or mailing it where you want the data to go. Instead of

modem or LAN costs. all you pay is a few dollars for postage or a few minutes' walk

Security. Rules of thumb say your data is worth at least \$1,000 per megabyte. You can use passwords for security, but the ultimate security is physical security. When you put your data on a Bernoulli Cartridge, you can remove it and store it safely.



Warranty, IOMEGA Corporation now includes a one-year limited warranty on the Bernoulli Box. A special

NOW LOOK WHAT WE'VE DONE: 50/ PRICE REDUCTION ON ALL BERNOULLI BOXES.

second-year warranty is also available for just \$129.95. (Warranty is on Bernoulli Box and adapter only. Available on product purchased after March 15, 1987.)

Think about it.

With over 100,000 Bernoulli Systems and 1,500,000 Bernoulli Cartridges in use, the Bernoulli Box has become a data storage standard. Give it some thought. Then put the Bernoulli Box to work, doing whatever you can think of. For information, see your local Authorized Reseller, or call 1-801-778-3000.



CIRCLE 378 ON READER SERVICE CARD

Sates Offices Stamford, CT 203-359-3658, Laguns Hills, CA 714-855-1211; San Jose, CA 406-496-2; Englewood, CO 303-740-8559, Alleria, GA 404-261-7815; Schiumburg, III, 312-397-4234; Framergham, MA 617-420-9090, Columbus, OH 614-866-9421, Delias, TX 214-458-2534, Adington, VA, 703-486-5290, Toronto, Canada, 416-363-9002, Brussels, Beloum 01132-2-720-9018

Accounting System Profiles

A sweeping analysis of the features and functions of the nearly 60 lowpriced, dBASE, and highpriced accounting packages in this special issue.



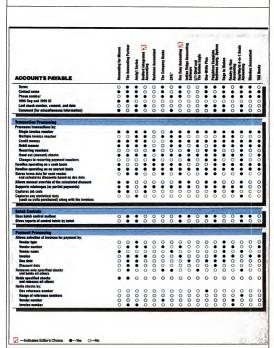
o thoroughly evaluate the relative strengths and weaknesses of the accounting packages reviewed, we devised a testing scenario that would look at the approach, function, and structure of each accounting package.

The testing scenario had each reviewer enter data on 8 days over a 2-month period using calendar dates beginning in November and ending in December. A variety of accounting tasks were performed for each

day, including setups, entries, processing, month-end closings, and year-end closings using the General Ledger, Accounts Pyable, and Accounts Receivable modules. Data from the system testing results were then divided into general-items and details summary of features. In the following tables, we present the accounting packed details—items that you would expect to find in most high-priced packages and will be surprised to find in most high-priced packages and will be surprised to find in many of the formation of



■ ACCOUNTING Summary of Features: Low-Priced Accounting Packages (Details) **GENERAL LEDGER** . . 0 . • 0 0 0 0 0 0 0 0 0 rt Writer (provided with General Ledger) es retrieval for any renge et ild dates or periode 0 0 0 0 0 iloya moltiple blerorchical structures oring raport gasaration 0 0 0 0 0 0 0 0 No. et columns 0 0 0 0 ě ፥ Size of columns ٠ O 0 Placement of columns ě 00 000 00 00 00 0000 • scriptive captions ō ۰ ۰ ٠ Ö es reports by acco ŏ ٠ ŏ ŏ laves data by account code lieids ē r a rasge of accor Horizontat (row) math 0 0 0 0 0 . Vertical (column) math ٠ • • : 000000 • 000 Use of constants ō 00 ō Total and subtotal O Ö • ۰ 00 ŏ dieed rounding to any level ē ě fors variances over sed soder specific amoun morates rolling-year reports through access to prior- and current-year data Uses coden lo: Access titles et accounts and organizational solts Combies fissecial and statistical emosats peting and Ferocasting iget compilation provides: Current-year (fixed) operating : : Correst-year forecast ō ō ě ě ō ō ō 00 ō ŏ ŏ Nest year's operaling hadge Ö Ó Allows astry to next year's budget during current year 0 ACCOUNTS PAYABLE nder number : 0 : dor same ٠ ě ٠ • ě ě for "psy-to" sddress ě ě . ĕ ě .00000 000000 000000 rnals "order-from" sede ō sees made this year to date • • 00 . • 00 . ě ě : ٠ ses made last year to date tal purchases lest year ē ō 00 000 Date and amount of last per i ۰ ۰ ٠ mai general ledger distribution lability and expense) -Indicates Editor's Choice ●-Yos O-No



ACCOUNTING Summary of Features: Low-Priced Accounting Packages (Details) **ACCOUNTS PAYABLE** sa single check for meltiple invoices 0 0 0 ō ACCOUNTS RECEIVABLE mer number • er name •••••• •••••• ••••00000•••00 or city 00000000000000 000 000 00 000000 00000 00000 ĕ : ŏ end gross prolit last year to date ō 00 00 00000 00000 O 00 000000 00 0000 and amount of last sale ŏ ĕ ō ō 0 0000000 ō 0 ĕ0000 ĕ • balance don to the past 12 months age days-to-pay (past 12 months) It limit and data set 00 000 õ 0000 0000 00 00 . . ō ō 0000000 .õ ŏ ŏ 0 o 0 0 • • 0 0 0 0 • 0 0 • • 0 0 0 0 —Indicates Editor's Choice ●—Yes ○—No

ACCOUNTS RECEIVABLE	Accounting for Micros	The Accounting Partner	Acctg1 Baries	Sectional Integrated	Business Accounteed	The Company Books	CPA.	One Easy Accounting 🔁	Indian Ridge Accounting Software	Uri Chief seel The Gelden Engle	One-Write Plus	Peschiros Completa Business Acety, System	Rays to Riches	Resely-to-Rus Accounting	RestWorld 4-In-1 Basic Accounting	Shoobax Accountses	The Banks
ineffee receipts from cash suites	0	•	•	0	0	•	•	0	•	•	•	•	•	0	•	0	-
and cash receipts on account there have account codes for each receipts only for		_	-	-	_	_	_	1		0	0	0	0	_	-	0	c
per-book reporting of cash follow	•	•	•	•	0	•	•	•	O	U	U	U	U	•	•	U	
einstates peld levolces on notice of a non-aufficient-funds (HSF) check applied to involce	0	0	•	0	0	0	•	0	0	0	0	0	•	0	0	0	(
a non-sufficient-lands (HSF) shock applied to invoice								_							_	_	
anders Report Seneration	ala ada	82		J. 3.	-	-	· Krin	-	-,4"			-	-	-	_		
clades reports of daily involces seried by: Decoriment	_	_	_	_	_	_	_	_	_		_					_	
Reich	0	0	0	00	0	00	0	0	0	0	0	0	0	0	0	0	1
Desterner	ĕ	ŏ	ŏ	ŏ	ö	ĕ	ő	ŏ	ŏ	ŏ	ö		~	•	~		- 7
Israica	ŏ	ŏ	ĕ	ŏ	ŏ	•	ŏ	ŏ	ŏ	ŏ	ŏ	•	•	•	ŏ	•	- 7
Department and customer in trial balance format	ŏ	ŏ	õ	Ö	ö	ŏ	ö	õ	Ö	ŏ	õ	ō	ō	ō	•	•	d
Batch summery with general ledger distributions in detail and in total	ō	•	•	ō	O	ō	ō	•	ō	ō	٠	•	•	ō	•	O	4
scludes reports of daily cash receipts sected by:																	
Department	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	- 1
Batch Costoner	0	•		0	0	0	:	•	0	0	•	•	0	0	:	0	9
Costomer	Ö	0	9	0	ő	Ö	ö	ö	0	0	0	Ö	:	:	ŏ	:	1
Descriment and customer in trial balance format	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ő	ŏ	ö	ŏ	•	č
Botch summary with general ledger distributions in detail and in total	ő	ĕ	ĕ	ŏ	ŏ	ŏ	ŏ	ĕ	ŏ	ŏ	ě	ě	ŏ	ŏ	ě	ŏ	3
rints trial balance reports using aging categories of:																	
Corrent 30, 60, and 90-plus days	•	•	•	•	0	•	•	•	•	0	•	•	•	0	•	•	
User's specification erforms seins of accounts by date specified and	0	0	:	ö	0		0	•		0	:	0	:	0	0	0	0
by department along report lockudes;	U	U	•	U	U	O	•	٠	0	O	٠	O	٠	U	O	U	
Contomer name		•	•	•	0	•	•	•	•	•	•	•	•	•	•	•	
"Bill-to" address		Ö	ŏ	ō	ō	ō	õ	õ	ō	ō	õ	ō	ŏ	ō	ō	ō	d
Contact some	•	ō	ŏ	ō	0	ō	ō	ō	•	ō	•	ō	ō	ō	ō	0	(
Phone symber	•	•	0	0	0	0	О	0	•	0	•	0	0	0	0	ō	(
roduces existence mailing labels	•	•	•	0	0	•	•	•	0	•	•	0	•	0	0	ō	•
rists standard dunning letters enerates customer statements	0	•	•	0	0	0	0	0	•	0	0	0	0	0	0	0	9
enerates customer statements on an as-required banks	•	•	•	•	0	O	o	•	•	•	•	•	•	•	•	J	•
rodenes dunning letters on an an-required basis	0	•	•	0	0	0	0	0	•	0	0	0	0	0	0	0	(
on an on-required basis																	

QUALITY STANDARD = COMPUTERS

PC Magazine Editor's Choice Standard-286 II

8MHz/0 Wait State MAGAZ

"The only thing standard with the CompuAdd Standard-286 II that I tested was its AT compatibility and its name. With its 8-MHz clock, zero wait state, speed and reset switches, and six 16-bit buses, the Standard-286 II stands out from its competition...its performance, features, and price are enough to make me want to take it home." Vincent Puglia PC Magazine Vol. 6#3



PRICE!

 OWalt State Intel 80286 Phoenix BIOS ATStyle Keybo
 612KB RAM Clock/Cale 1,2MB Floppy Drive

Enhanced Versions:

Standard-286/10 10MHz processing speed with one wait state.

Standard-286/12 12MHz processing speed with one wait state. \$1495

Computers

\$995





STANDARD TURBO-88

- Keyboard-selectable 4.77MHz-8MHz processing speed
- AT_{im} style keyboard
- 256KB random-access memory expandable to 640KB on motherboard
- Eight expansion slots Intel 8088-2 processor
- One 360KB half-height diskette drive with diskette drive controller

\$445

STANDARD TURBO-10

——The New Addition—

The Standard Turbo-10 breaks the 8088 turbo speed barrier;

- Keyboard-selectable 4.77MHz-10MHz processing speed
- AT_{im} style keyboard 640KB random-access memory
- included
- Eight expansion slots Intel 8088-1 processor
 - One 360KB half-height diskette drive with diskette drive controller
 - Keyboard lock System reset button

\$495

Personal Computer Products"

12303-G Technology

Austin, TX. 78727



STARTER KITS

Everything You Need To Begin Serious Computing Immediately!!

For those of you who don't want to spend the time end effort deciding exectly what parts you need for your computer system, CompuAdd has designed the Career Starter Kit and the Professional Starter

The starter kits provide the most popular hardware features. like 8MHz and 10MHz processing speads, monographics capaThe starter kits also include the three most popular types of software: a word processor with spelling checker, a spread sheet, a communications package, and the BASIC programming lenguage. Your disk operating system, MS-DOS, is also included. These are packaged together with the eccessories that are vital to a computer system, like cables, manuals, diskettes, and printer paper.

The starter kits - Everything you need to start computing immediately, and a great



Only.. \$1395 Professional Starter Kit:

286/10MHz aystem with Intel 80286 processor

Professional Starter

14" EGA high resolution color monitor and enhanced graphics adapter card.

Computer

Monographics Video

High resolution (750 x 350) amber monochrome monitor with 12" display screen, Hercules-compatible monochroma graphica card with

Software

Enhanced Zan software: The Professional Zen has over 250,000 cells available. Professional Link offers support for ANSI-X and VT 100 MS-DOS 3.2 and GW BASIC are also included. All software comes with complete documentation.

Accessories

200 sheets continuous-form paper, printar cable,

Career Starter Kit:

Computer

IBM compatible Standard Turbo-88 computer with 8088 processor running at keyboard-selectable 4 77MHz or 8MHz, 256KB RAM, half-

14" EGA high resolution color monitor and enhanced graphics adaptor card.

Only \$1195

IBM & AT are registered trademarks of International Machines Business Corp. les is a trademark of Hercules & MS is a trad-



"Personal Computer Products"



The Standard Solution!



Enhancement Products for IBM® PC's and Compatibles

STANDARDE

STANDARD MonoGraphics Video



Characters, Graphics Mode 720 x 348 Pixels \$60 Parallel Port...

With Tit & Swivel Rese Monographics \$159 Mono Combo STANDARD

Color Video

\$79 Color Monitor \$325

UL/CSA Listed. \$69

AT-MFC

Mulitunction Card for ATs

Serial & Parallel Port \$139

Up To 1.5MB

Memory Expansion

w/Parallel Port CGA Combo Color card and Monito

\$379 Charge Card 286 Power Supply

CHARGE CARD (286

ColorCard

Intel 80286 \$295 Power For The PC I/O Cards

AT I/O Serial & Parallel Port. \$69 PCVO Also has a Clock Calendar & Game Port \$69

640 x 350 Pixels, \$169 \$109

EGA Combo STANDARDE

14", High

Resolution

EGA card

and Monitor

\$439

\$579

EGA Video

384K RAM, Parallel Port, Clock/Calendar, Game Port. Serial Port. Software... External Modem

\$99

1200 Baud Standard Brand 1200 Baud Everex . \$129 2400 Baud Everex. \$239

Memory Cards

\$39

MEM-576 w/0K \$109 EMS PC w/OK \$129 FMS AT with

Fully Compatible. \$139

Keyboards ForTheIBM® PCorXT

101-Key Enhanced. 5151-.... \$69 ATStyle.....

Call Toll Free: 800-531-5475

"Personal Computer Products"

12303-G Technology Blvd. Austin, TX 78727

HARD DISKS AND BRAND NAMES



MiniScribe



For AT® and Compatibles One Year Warranty

- 28ms Average Seek Time
- Linear Voice Coil Closed Loop
- Servo System Whitney Technology Flexures
- And Sliders Fali-Sape Automatic Actuator Lock . Low Power-14 Watt Standby Power

70MB..... \$875

Tape Backups



Stream-20 Backs up 5MB per minute on PC or XT. Software allows file by-file retrieval . . . \$580

Stream-60 For your AT: Backs up 5MB per

NEC MultiSync Monitor

Adjusts horizontal frequency, up to 800x560 resolution, supports TTL and analog inputs, 13" display

\$599 Video 7

Vega EGA Deluxe

Compatible with IBM EGA

256KB of display RAM,...

minute, Software supports unlimited backup \$757

 Uses 80286 Processor Keeps 8088 in System . Processor Selectable To Insure 100% Compatibility Optional 80287 Numeric

\$379

LQ-800. \$499 LQ-1000. \$669 FX-286.... FX-86e....

FPSON

\$365

FREE

With Every Hard Drive and FlashCard



- · Easy to use Back up and restores files · incremental backup
- · Menu-driven or use from DOS

WESTLAKE DATA

360KB Floppy Drives

360KB Floppy for PC's

Teacor Panasonic 360KB Floppy for AT's Color coordinated face plates \$109

SixPakPlus 384KB BAM

AST Advantage 128K \$399

Serlai, Parallel Port,

AST Rampage 258K

Clock/Calendar.

For The IBM PC

 MiniScribe Hard Disk Drive Western Digital Controller • Cables

· Mounting Hardware Complete Illustrated Installation

20MB..... 30MB..... 20MB (For Compag) \$359 Includes 31/2" shock-mounted drive

FlashCards 20MB & 30MB **Hard Cards**

Editor's Choice

 Western Digital Controller . Boots From FlashCard

 One Year Warranty Installs in Minutes

\$195

\$259

 Shock Mounted · 3½" Hard Disk

FlashCard-20. FlashCard-30.

> 8087-3..... \$129 R087-2.... \$159 80287 \$219 R0287-8.... Abova Board/AT 64K 150ns. 256K 150ns. 256K 120ns

192+ 193 + At CompuAdd Our Fine Print is in Your Favor. We offer this hest service and our e in the mail order industry, so you can purchase with confu FREE 30-day money-back guarantee
 FREE credit card ordering — no surcharge FREE one-year warranty

We accept MasterCard, VISA, money orders, certified checks, personal checks rolease allow 10 days for processinal. CODs d All return Items must be accompanied by a Return Authorization number; call our fechi subject to change. Texas residente please add 71% % seles tax. Canadian residents add dub Corporate and Institutional Accounts

ferms basis with a minimum purchase of \$50. We pro as today We Make Your Job Easier

CompuAdd



Since 1982

■ ACCOUNTING

GENERAL LEDGER	AccountMate	Assistant Controller	Chempion III	dPROGRAMMER	SST Database Accounting Library
Changes hierarchical reporting structure without modifying chart of accounts	0	0	•	•	•
Isolates and identifies prime account	•	•	•	0	•
soletss and identifies subaccount	•	•	•	0	•
Uses company code (Identifier) Front-fills prims account with zeros	0	0	•	0	•
Processes multiple companies with consolidation	9	_	0	Ö	
Processes multiple companies without consolidation	<u>: </u>	<u>:</u>	ő	ő	Ö
Transaction Processing					
Builds recurring standard journals Edit and validation capabilities include:	•	•	0	0	•
Ensured balanced entry	•	•	•	0	•
Use of batch control totals	0	•	0	•	0
Reports status of arror files and suspense accounts (if these sxist) before closing period	O	•	O	0	O
Allocations	¥.				64
Specifies and inputs monthly standard allocations	•	0	•	0	•
Produces audit trail and control worksheet documenting automatic journal entries	•	0	•	0	•
Data Validation and Integrity					
Subsystems use common general ledger master files	•	0		Ω	•
					_
Database maintains period data for each unique					
	•	•		0	
Database maintains period data for each unique account on the prior year: Actual Budget	:	:	•		:
Detabase maintains period data for each unique account on the prior year: Actual Budget Detabase maintains period data for each unique	:	:	:		:
Database maintains period data for each unique account on the prior year: Actual Budget Database maintains period data for each unique account on the current year:	:	:	:		:
Detabase maintains period data for each unique account on the prior year: Actual Budget Budget Budget Budget Actual Budget Budge	:	:	:		:
Detabase maintains period data for each unique account on the prior year: Actual Budget Budget Detabase maintains period data for each unique account on the ourrent year: Actual Criginal budget	•	:	:		:
betabase maintains period data for each unique account on the prior year: Actual Budget Debabase maintains period data for each unique account on the current year: Actual Original budget Forecast (latest budget or reforecast)	•	:	•		:
Outsides methating period data for each unique account on the prior year: Actual Guidger Gui	o total		•		:
Database mehitains period data for each unique account on the prior year: Actual account on the prior year: Actual Obligation on the contract year of the prior year of the contract year: Actual Original budget or reforecast) Periorist (Seate budget or reforecast) Periorist (Seate Seate S		•	•		•
Intellesse maintaine period date for each unique assessed on the piet assessed on the current year: Original budget Forecast Edects budget or reforecast) Forecast Edects budget or reforecast) Forecast Edects on the current in the cur			•	0	•
Database minimizer period data for each unique securing of this piet research of this piet period data for each unique Database minimizer period data for each unique Database minimizer period data for each unique Antesa Conjunt Sunger Conjunt Sunger Conjunt Sunger Conjunt Sunger Personal Special Sunger	kieja -		•	•	•
Outdokes minister period data for each unique account of the pietr account of the current year: Actual Actu			•	•	•
Database minimizer period data for each unique securing of this piet research of this piet period data for each unique Database minimizer period data for each unique Database minimizer period data for each unique Antesa Conjunt Sunger Conjunt Sunger Conjunt Sunger Conjunt Sunger Personal Special Sunger			•	•	•
Outdookse minimizer partied data for each unique account of the pietr account of the current year: Outdookse minimizer partied data for each unique account on the current year: Original budget account of the current year: Original budget account of the current year: Forecast falses the budget or referenced; Respecting of pietrs to screen account year of the pietrs account year of month between the pietrs and pietrs to data from Beginning year belonger and year-to-data transactions. Beginning years the basic out with: Beginning were the basic out of the pietrs account years of the month transaction.				•	•
Chalches meniodine period data for each unique secured on the piet secured of the piet				•	•
Database maintaine period data for each unique account of the piet account of the current year: Original budget Forecast (Seate to budget or reforecast)				•	•
assessed in the prior para- landgest Control of the				•	•
Database maintains period data for each unique account of the plant particular processor of the plant particular processor of the plant particular period data for each unique Database maintains period data for each unique Database maintains period data for each unique Database of the each particular particu				•	•

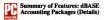
BENERAL LEDGER	AccountMate	Assistant Coelroller	Champios III	SPROGRAMMER	Accounting Library
Standard Report Generation			1.		25.3
enerates standard accounting reports for any defined organizational level	0	•	•	0	•
toport Writer (provided with General Ledger)		174			** ST. 151
Blows retrieval for any range of valid dates or periods	•	0	0	0	0
imploys multiple hierarchical structures during report	0	•	0	Ö	0
generation					
see flexible, user-defined report formats for:					
No. of columns	0	•	0	•	0
Size of columne	0	•	0	•	0
Placement of columns	0	•	0	•	0
Descriptive captions	0	•	0	•	0
reales reports by account segmentation	0	•	0	0	0
etrievee data by account code fields for a range of	0		0	0	0
accounte					
rithmetic operations include:					
Horizontal (row) math	0	0	0	•	0
Vertical (column) math	0	0	0	•	0
Use of constants	0	0	0	•	0
Total subtotal	0	Ö	Ö	•	0
Cross-footing	0	0	0	•	0
Defined rounding to any level	0	0	0	0	0
ffers variances over and under specific amounts	0	0	0	0	0
lenerates rolling-year reports through access to	0	•	ō	0	O.
prior- and current-year data					
see codes to:					
Accese titles of accounts and organizational units	0	0	0	•	0
Combine financial and statistical amounts	0	0	0	0	0
ludgeting and Forecasting ludget compilation provides:					
Current-year (fixed) operating budget					
Current-year forecast	o .	0	Ö		Ö
Naxt year's operating budget	0	Ô	0	0	0
llows entry to next yeer's budget during current year	Ö	Ö	Ö	•	•
ACCOUNTS PAYABLE					
faintains and recalls data fields on a formatted screen					
for each vendor for:					
Vendor number	•	•	•	•	•
Vendor name	•	•	•	0	•
Vendor "pay-to" eddrass	•	•	•	•	•
Alternata "order-from" address	0	0	•	0	•
Purchases made this year to date	•	•	•	0	•
Purchases made last year to date	0	0	0	0 .	•
Total purchases last year	0	0	0	0	•
Date end emount of leet purchase	•	•	•	0	•
Normal general ledger distribution accounts (liability and expense)	•	0	•	0	•

Summary of Features: dBASE Accounting Packages (Details)

ACCOUNTS PAYABLE	AccountMale	Assistant Controller	Champion III	OPROGRAMMER	SBT Database Accounting Library
Terms	•	•	•	0	•
Contact name	•	•	•	0	•
Phone number	•	•	•	•	•
1099 fleg and 1099 ID	0	0	0	0	•
Last check number, smount, and date	0	0	0	O.	•
Comment (for miscellaneous information)	0	Ö	•	0	•
Transaction Processing	A STATE OF THE STA	111	Cinter 1		
Processes transactions by:					
Single Invoice voucher	•	•	•	•	•
Multiple invoice voucher	•	•	•	0	0
Credit memos	•	•	•	•	•
Debit memos	•	•	•	•	•
Recurring vouchers	•	•	O.	O.	•
Hand-cut (manual) checks	•	•	•	•	•
Changes to recurring payment youchers	•	•	•	ō	•
Handles operating on a cash basis	ō	•	•	ě	•
Handles operating on an accrual basis	•			•	•
Stores terms data for each vendor and calculates		ō		ō	•
discounts based on due data	•	~	•		-
Allows manual override of the calculated discount		0		0	•
Supports retainages (or pertial payments)		~		~	:
Captures lob code	•			•	:
Captures not code Captures any statistical data (such as units purchased) slong with the invoices	0	Ö	:	o	Ö
Batch Controls		2 4 2 E	12.	鬼鬼	
Uses batch control method	0	· · · · · · · · · · · · · · · · · · ·	0	•	0
Gives reports of control totals by batch	O.	Ö	Ō	•	ō
210210000000000000000000000000000000000					
Payment Processing Allows selection of invoices for payment by:	的和政治	37.2			
Vendor type	0	0	0	0	
Vendor number	ě	ĕ	ě	•	
Vendor name	Ŏ			ŏ	~
Invoice	~	~		ŏ	~
Due data		~		ő	
Discount date	-	-	-	ŏ	-
Releases only specified checks and holds all others	~	~	~	0	Ξ.
Heleases only specified checks and noice all others Holds specified checks and releases all others	-	-	•	0	•
	•	•	U	U	O
Holds checks by:	_		_		
One reference number	•	0	•	0	O
Rangs of reference numbers	•	0	•	0	0
Vendor number	0	0	•	0	•

ACCOUNTS PAYABLE	AccountMate	Assistant Controller	Champion III	APROGRAMMER	Accounting Library
Check Processing	25 July 200			18	PART DEC T
Prepares payment checks for invoices based on due dates calculated for discount amounts	•	•	•	0	•
Creates single check for multiple invoices	•	•	•	0	0
rints standard messages on remittance advices selected from a coded table	0	0	•	0	•
ACCOUNTS RECEIVABLE					
Asintains and recalls data fields on a formatted screen					
for each customer for:					
Customer number	•	•	•	•	•
Customer name	•	•	•	•	•
Customer address	•	•	•	•	•
Customer city	•	•	•	•	•
Customer ZIP code	•	•	•	•	•
Customer "bill-to" address	•	0	•	0	•
Customer "ship-to" address	•	•	•	0	0
Sales and gross profit this year to data	•	•	•	0	0
Sales and gross profit last year to date	0	•	•	0	•
Year-to-date finance charges	0	0	0	0	•
Date and amount of last sale	0		•	0	•
Tax codes (or tax exempt number)	•	0	•	0	•
	•	Ö	•	Ö	•
High belance due in the past 12 months Average days-to-pay (past 12 months)	0	0	0	0	0
Credit limit and data set	0	0	0	Ö	0
	•	•	•	Ö	•
Salesperson code Contact name	•	•	•	0	•
Phone number	•	•	•	•	•
Comment (for miscellaneous information)	Ö	Ö	•	Ö	
Comment (for miscellarieous internacion)	- U		<u> </u>	0	
Account Processing Uses batch control methods	0		0	-	0
Provides automatic calculation of finance charges		•		0	•
based on user-established rates		<u> </u>	•	0	
Application of Cash Receipts	1 4 17	2.9 4 .38		-	1 × 1
Updates statistical information on balance-forward	0	0	•	0	0
accounts as new invoices are processed		_			
Open-Item Methods					
Applies cash in an on-line mode to:	_				_
A specific item	•	•	•	•	•
Multiple open items	•	•	•	0	•
Automatic write-offs of small dollar-amount	0	•	•	•	U
differences between cash receipts and invoice					
amounts	_		_		
Assigns write-offs to specific general ledger code Computes and accounts for available discounts as	•	0	•	0	0
computes and accounts for available discounts as cash is applied on cash receipt data and customer	•	U	•	U	•
terms code information Allows user override of calculated discount	_	0	_	0	_
		0		0	

■ ACCOUNTING



ACCOUNTS RECEIVABLE

	AccountMate	Controller	Champion III	CPROGRAMMER	Library
Open-Item Methods		18 A	3	a car	A STREET
Handles receipts from cash sales and cash receipts on account	•	•	•	•	•
Enters bank account codes for cash receipts entry for per-bank reporting of cash inflow	0	•	•	0	0
Reinstates paid invoices on notice of a non-sufficient- funds (NSF) check applied to invoice	•	0	•	0	0
Standard Report Constration	美编	**			
includes reports of daily involces sorted by:					
Department	0	•	•	0	•
Batch	0	0	0	0	0
Customer	0	•	•	0	•
invoice	0	•		0	•
Department and customer in trial balance format	0	•	•	Ó	•
Batch summary with general ledger distributions in detail and in total	0	0	0	0	0
ncludes reports of daily cash receipts sorted by:					
Department	0	•	•	0	•
Betch	Ö	ō	ō	ō	ō
Customer	0	•	•	Ó	•
Invoice	Ö	•	•	ō	•
Department and customer in trial balance formet	ō	•	•	ō	•
Batch summary with general ledger distributions in detail and in total	O	Ó	•	ō	ō
rints trial balance reports using aging categories of:					
Current 30, 60, 90-plus days	•	•	•	0	•
User's specification	•	•	•	Ö	•
Performs aging of accounts by date specified and by department	•	•	•	ō	•

●—Yes O—No

"Wait a second. You're saying I can create applications in 1-2-3, hand them out to, say, 10 users...and they don't need 1-2-3 at their desks?"

I thought that was impossible... not to mention illegal?'



"Now you want me to believe it costs under \$100?"

It's true. There's finally a way to distribute executable spreadsheet applications—as many as you need, to anyone who needs them.

It's simple. It's secure. And at the low introductory price of only \$99.95, it's incredibly inexpensive. Introducing @LIBERTY.

Spreadsheets for everyone...at under \$10 each.

@LIBERTY (pronounced "At Liberty") is the first-ever spread-sheet compiler. It works by separating the task of spreadsheet development from the task of spreadsheet usage. As a result, you can convert your spreadsheets into "runtime" versions. In English, this means you can create executable 1-2-3 files that run on IBM-compatible PCs—and your users won't need a copy of the original spreadsheet package.

©LIBERTY works with 1-2-3 grams. With it, up to 10 users can share your applications. And ©LIBERTY is far more affordable than any site licensing plan available. You can add up to 15 more users for only \$99.95—and you can keep adding as many as you need. Imagine: You'll be able to dis-

tribute dozens—even hundreds—of runtime worksheets for under \$10 per end user.









Your formulas are always safe, your work is always secure.

@LIBERTY makes sure your proprietary information and sensitive data (like salaries) are inaccessible to your users. That goes for the clerk who might hit a wrong button, and the power user who might try to pass the time by hacking away at your formulas.

The only thing anyone can do is input data exactly where you want. And you specify where by simply "unprotecting" cells in your original spreadsheet.

This way, no one can get at your formulas. No one can change your applications. And no one can destroy your hard work

You get the big picture, without doing the little work.

Almost as important as your ability to safely distribute executable spreadsheets, is your ability to collect the files and export all of that data back into your "master" 1-2-3 program.

This entirely new, costefficient approach to data collection and spreadsheet consolidation allows you to get everyone you need involved in a project—and get your results in record time.

Perfect for heavy applications, macros, graphics...the works.

Even if your applications involve complex 1-2-3 macros, you can compile them into "runtime" versions with @LIBERTY. And on top of low cost and security, you'll receive some added benefits.

For instance, @LIBERTY puts more macro commands at your disposal to make applications

Who can benefit from @LIBERTY... and how,

Corporate Users Do everything from budgeting to cost-estimating to forecasting.

Send your agents spreadsheets
 for sales illustrations.

Have your clients input their own financial data, so you can

economically (and safely) perform your audit.

CPAs and Distribute your tax planning Tax Lawyers methods to clients.

Agencies For internal auditing, inventory control—almost anything you'd use a traditional spreadsheet for.

VARs and Develop and market your business and technical solutions.

easier to use. It allows you to hide your fixed data and macros. And it even lets your users specify worksheet color schemes, as well as use most graphs from the original spreadsheet program.

What's more, @LIBERTY works with spreadsheet sizes up to 64,000 cells. And its proprietary algorithm can recalculate much faster than 1-2-3. So your users will spend a lot less time waiting for large spreadsheets to recalculate—and a lot more time being productive.

More than a high quality product...high quality service and support.

Since 1983, SoftLogic Solutions has shipped copies of proven PC

software products to over 200,000 satisfied customers. We guarantee a product of only the tighest quality and eliability. And we back @LIBERTY up with a Technical Assistance Hotline and a Customer Support Bulletin Board System. We even offer a 30 day return privilege. If @LIBERTY doesn'l live up to our advertised claims, we'll gladly refund your purchase price.

"Talk about breakthrough. I can't believe I can get all this now... and at this price."

There's no doubt:

@LIBERTY is truly one of
the most useful software programs
available. And at \$99.95, it's an
incredible value. However, this low
introductory price won't last forever.
So make sure you don't miss out.
Contact your local computer dealer
and order @LIBERTY today. Or call,

800-272-9900. (In New Hampshire, 603-627-9900.)





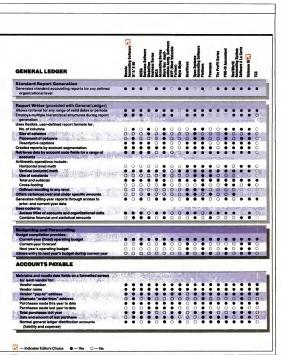
■ ACCOUNTING



GENERAL LEDGER	Mecote	H'A'S 96	MCSA	Medellies	BICA	Micro Bes. Appil-	MVP (Most Valuable	Myte Myte	Sew/News	Spon Systems	Telloum	Powerpac	The Profit Series	PRD-IV Accountset	Tea!Werld	Software A La Carte	Tolomos III	2
Changes hierarchical reporting structure without modifying chart of accounts modifying chart of account solutes and identifies gains account labels company code (dentifier) — Front-fills gains account that company code (dentifier) — Front-fills gains account with acres Processes multiple companies with consolidation Processes multiple companies without consolidation	•	•	•	0 000000	0	• • • • • • •	:	0	0	5000	• • • • • • •	0	0	•	•	•	•	• • • • • • • • • • • • • • • • • • • •
Franceotton Processing Builde recorring standard pomate Builde recorring standard pomate Ensured betanded entry Use of bath control totals Reports a status of even fine and suspense accounts (if these saids) subview does	• • • • •	• • • • •	:	0 000		:		0	200		• • • •			•	•0		•	- 5
Allocations Specifies and inputs monthly standard ellocations Produces sudit trail and control worksheet documenting automatic journal entries	:		:			00·	00	00	00	00	•	•	• 0	00	00	·	•	0
Deta Validation and Integrity Subsystems use common general ledger master files	•		•	•		•	•	•	•	0	•	•	•	•		•	•	
Personcial and Etatistical Detablece Debabes enintains period data for each unique account on the prior peer: Actual Goodge Debabes enintains period data for each unique account Cetablece enintains period data for each unique account Actual Original Societ Ferences (tiente brodget or referencest)	• 0	:		•0.	•	•0 •0•		00		· (2000			XX - 0		• • • • • • •		:	0
Reporting Allows output option to screen Allows output option to disk file	:	:	:	:	00	00	:	00	:	:	:		:				00	
Examinary Report Generation Reports and-of-month basence with: Beginning-were balance and year-to-date transactions Beginning-month balance and the month's transactions Beginning-month balance and summary of the month's transactions	:	:	:	:	:	:	:		:	0	•	:		:		:	:	0
transactions les cesh flow worksheets (default) Produces cash disbursements report	0	0	0	000	0	0	0	0	:	0	:	0	0	0	:	0	0	0

ACCOUNTING







The Nanosecond





Think of a clock ticking. Tick...Tick...Tick .One second apart. In a world full of seconds. things could get pretty tedious. So let's pick up the pace a bit, shall we?? To, uhh, nanoseconds, yeah - nanoseconds. In between seconds ticking off are little nanoseconds, also ticking off. One billion of them. Ticktickticktick tickticktickticktickticktickticktick. Now that livens things up, doesn't it?? Suddenly, next to a nanosecond, a second is just about as exciting as watching the grass grow. So all you folks that think the speed of light is so blinding (at 186,000 miles per second) just aren't putting things into the proper perspective. Light really only travels 11.785 inches...in a nanosecondII In a world full of nanoseconds, light's just a flash in the panII

But one company always moving ahead is The Fast Computer Co. Noratter with yourself or your computer, delivery is just one business day away, quaranteed. All our order-processing is completely or-like, 26 COLEANTEED LOVENING THE LAVENING THE LAVENING COLEANTEED LOVENING THE LAVENING THE LAVENING COLEANTEED LOVENING COLEANTEED LOVENING COLEANTEED LAVENING COLEANTEED LAVENI

OVERNIGHT DELIVERY

HARDWARE LAPTOP COMPUTERS	H
TOSHIBA T1100+ CALL T3100+ \$3289	OG Is P. A
PRINTERS	N
EPSON FX-86e \$339 FX-286e \$479 LQ 800 \$479 LQ 1000 \$679	G QEP V
NEC P 660\$479 P 760\$659	v
M182. \$265 M192. \$369 M293. \$735	H Si
P3215L \$559 P/5 351 \$999	5
LASER PRINTERS	'n
CANON Laser Printer LBPBA1 \$1899	P
HEWLETT PACKARD Series 2	N
MONITORS	
AMDEK	~
Color 600-5. \$369 Color 722. \$475 Amber 31DA. \$149 410A. \$159	K
NEC	ř
Multi-sync color w/swivel base\$579 PRINCETON GRAPHICS	K 5
RGB HX-12 \$449 RGB HX12E \$535 Amber Max 12 \$159	i
Amber Max 12 \$159 RGB 5R-12 \$569	B
MULTI-FUNCTION BOARDS	B
AST RESEARCH	_
AST RESEARCH 5x Pack Premium \$199 5x Pack Plus (384K) \$199 Rampage w/256K \$275 Rampage 286	В
Rampage 286 w/512K \$429 Advantage (128K) \$349	P

GRAPHIC BOARD:	
HERCULES Color Card Graphics Card Plus InColor PARADISE SYSTEMS	\$155 \$185 \$325
Auto Switch EGA Card	\$215
	\$349
	\$319 \$349
VIDEO 7 Vega (½ Card) Vega Deluxe (½ Card)	\$249 \$349
MODEMS	20
HAYES 5martmodern 1200	\$309
Smartmodem 1200B	
w/Smartcom II Smartmodem 2400 Smartmodem 2400B	\$465
w/5martcom II	
MOUSE INPUT DEVI	CE5
PC Mouse w/Dr. Halo 2	\$119
MICROSOFT Microsoft Mouse (Serial)	\$125
Microsoft Mouse (Buss)	\$119
SURGE PROTECTO	R5
KENSINGTON MICROWARE Masterpiece Plus.	\$119
KEYBOARDS	
KEYTRONIC 5151 (Deluxe)	\$169
MEMORY STORAC	E
IOMEGA	
	51449
(20 + 20)	1899
Cartdg, Tr	\$169
Cartdg. Tr	\$25
HARD DISC DRIVE	5
PLUS Hard Card 2D Mb	\$64

HARD DISC DRIVES	ı
SEAGATE 20 Mb ½ Ht Int. \$36 30 Mb ½ Ht Int. \$46 20 Mb Full Ht (AT) \$56 30 Mb Full Ht (AT) \$60 4D Mb Full Ht (AT) \$96	999
SOFTWARE	
WORD PROCESSING	١
Display Write IV \$32	59
Advantage II	5
Rel. 4	9
WORD PROCESSING ADD-ONS	
Print Shop	9
DATABASE MGMT	ì
Cornerstone Sé d Base III Plus S40 d Base III Lan Paik \$59 Fox base Plus \$24 PFS Professional File \$14 Q 8.A \$22 R Base System V \$35 Revelation \$51	995
DATABASE MGMT ADD-ONS	
Clipper	g
Writer	Gunn
INTEGRATED SPREADSHEETS	ı
Ability Plus \$14 Enable \$36 Framework II \$40 Lotus 1-2-3 \$31	9590

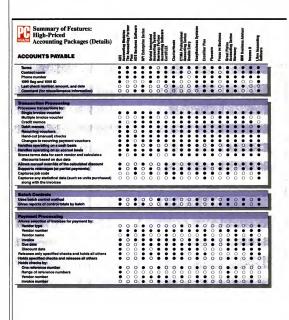
SPREADSHEET ADD-ONS
HAL \$109 Lotus Report Writer \$79 Smart Notes \$49 SQZ \$59 DESKTOP PUBLISHING
Click Art Personal Publisher \$99 Harvard Pro Pub \$445 Page Maker \$499 Ventura \$545 GRAPHICS
Energraphics (NEW) \$309 Microsoft Chart \$189 CAD/CAM
Generic CAD\$69 ProDesign II\$179 LA NGUA GES
BASIC Compiler (M5) \$255 C Compiler (M5) (4.0) \$269 COBOL Compiler (M5) \$425 FORTRAN Compiler
(M5), \$269 Lattice C Compiler \$239 Macro Assembler (M5) \$95 Pascal Compiler (M5) \$179 Quick BASIC (M5) \$65 Turbo Pascal (plus BCD & 8087) \$65
PROJECT MANAGEMENT
Harvard Total 2 \$375 Microsoft Project \$239 Super Project Plus \$305 Timeline \$235
Managing Your \$115 Money \$115 Dollars N' Sense \$105 ACCOUNTING
BPI Entry
Modules CALL MISC/UTILITIES
Copy II PC \$39 Crosstalk XVI \$99 Disk Optimizer \$35 Fastback \$89 Microsoft Windows \$65 Norton Commander \$45 Norton Utilities \$55 Remote \$149

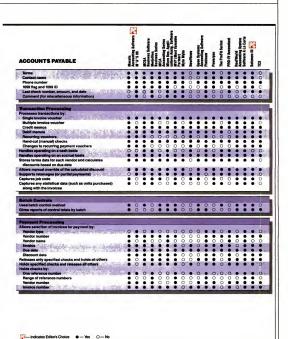


AS FAST AS YOU THINK



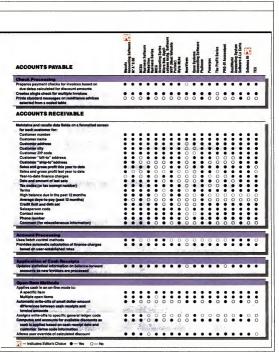
ACCOUNTING





■ ACCOUNTING





A lot of computer for your money





Bentley-286/12

Base System . . .

12MHz 80286 processor, 1MBRAM, 1.2MB floppy drive, dual floppy/hard drive controller, 200-watt power supply, keyboard.

 With 40MB HD MiniScribe, 28ms. . With 70MB HD MiniScribe, 28ms

Bentley-286/10

Base System 10MHz 80286 processor, Phoenix BIOS, 512KB RAM, 1.2MB

floppy drive, dual floppy/hard drive controller, 200-watt power supply, keyboard. · With 40MB HD MiniScribe, 28ms

With 70MB HD MiniScribe, 28m

\$109

\$129

Bentley Computers... The Price Performance Leaders!



AT I/O- Sensite

... plus a one-year warranty!





Bentley-286/8

8MHz 80286 processor in a compact chassis, Phoenix BIOS, 512KBRAM, 1.2MB floppy drive, dual floppy/hard drive controller, 200-watt power supply, keyboard.

 With 20MB HD Seagate, 65ms.... With 40MB HD MiniScribe, 28ms . . .

eight expansion slots, 150-watt power supply, keyboard. With 20MB HD MiniScribe, 85ms.

Base System . . .

The turbo-charged XT-compatible: 8088-1 processor running at 10MHz, 640KBRAM, one 360KB floppy drive and controller, With 30MB (RLL) MiniScribe, 85ms...

> Tape Backups- Avoid disk swapping earmany rate for your IBM+ AT, PC, or compatible

Enhance your Bentley 286 with our popular AT add-on products...

MiniScribe

Hard Disk Drives

High Quality . High Storage Capacity High Perfomance . Low Price

One Year Warranty

Both drives feature an average access time of 28 milliseconds. The drives' positioning systems use a rugged linear voice coil actuator that eliminates head skew problems common with other positioning mechanisms Microprocessor-aided control provides fast, accurate head positioning. In addition, superior head/disk tracking is achieved through the use of Whitney sechnology head sliders and flexures With MiniScribe's fail-safe actuatoc lock, the head positioner is retracted and locked at power-down, elimating data

zone contact. Partitioning software is included so you can take advantage of the full storage capaci



Computer Products Round Rock, Tx. 78681

Stream-20 by Tallgrass Stream-60 by Wangsel

\$389 Forthe AT

Amazing prices on quality computers and addon products. Free UPS ground shipping in the continental U.S.A. Thirty-day money-back guarantee. No surcharge for MasterCard, VISA, COD, or cashier's check. Fortune 1000, university, and institution purchase orders accepted with approved credit. Phenomenal

saving with a one-year warranty Order Toll Free 800-331-6799

In Texas Call: 512-250-9897 Tech Support: 512-250-8202



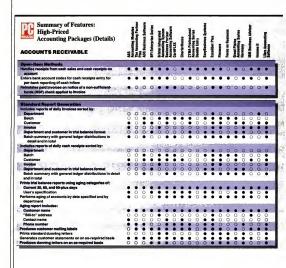
Quality 20MB and 40MB hard disk kits for the IBM PC and comparables Each for includes a Half-beight Winchester hard disk, hard disk controller, cables, software, mounting hardware, and complete illustrated installation

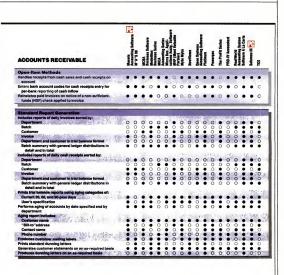
20MB \$319 30MB. \$339

360KB Diskette Drives-

Convenience and comparibility For PCs For ATs......\$109

■ ACCOUNTING





FANTASTIK
386'S
EOR PALE

DEAR READER:

; HAVE LOST MY CHIRT GETTING. FABULUS NEW

386 COMPUTERZ FOR YOU.

See THE INCRESIDLE PRICES

AND ENTER MY CONTEST TO PICK ME A NEW SUIT (NO LAW SUITS PLEZE).

-your FreND AMT.ir.

You listen to AMT jr.!

His clone suit may be gone, but he still has the industry's hottest values in personal computers, peripherals, and accessories.

Like the brand new AMT-386 and AMT-386 TURBO.

Big Brother never delivered this kind of power or these kinds of prices.

These sensational systems can handle a growing list of over 10,000 PC DOS and MS DOS programs with a speed and flexibility that's downright awesome.

And with our many other systems and options, you have literally hundreds of configurations to choose from. Truly, AMT has a system, a price, and an ownership plan for everyone.

That's why our customer list reads like a Who's Who of businesses in America.

So let AMT jr. put you in a "fantastik" 386 model today. (And you can help put him in a new suit.)





Powerful 32-bit Intel 80386 CPU; 6/16 Milz switchable clock; 512 KB of 32-bit RAM on the motherboard; societ for 80387 math co-processor; floppy and hard disk controllers; 12 AB floppy disk; Phoenix BiOS; eight expansion slots (four AT, two PC, and two 32-bit memory); RT-style keyboard; clock/calendar with battery backup.



May 4, 1987

AMT-386 TURBOTM Incomparable Intel
80386 CPU; 60f6 MHz switchable
dock; "zero" wait state in a 64 KB
cache; 1 MB of RAM expandable to
AU on the methodorest occlusion.

4 MB on the motherboard; socket for 80287 math co-processor; floppy and hard disk controller; 1.2 MB floppy disk; AMI BIOS (industry's most compatible); eight expansion slots (six 16-bit, two 8-bit): RT-style her/board.

AMT-286 STRIPPED FOR ACTION \$699.



Time-tested Intel 80286 CPU; 8/10 MHz switchable clock; 640 KB of RAM on the motherboard; Phoenix BIOS; RT-style keyboard.

AMT-286 TURBO™ HOT ROD All the features of \$799. the stripped down AMT-286, but includes faster 8/12 MHz switchable clock.

AMT ir.™ GRAPHICS SPECIAL Includes Video 7's Vega Deluxe EGA, with 640 x 480 resolution:



switchable clock: 640 KB of RAM on the motherboard: "zero" wait state on memory: floopy disk controller: 360 KB floppy disk; security keylock; RT- or AT style keyboard,

TRANS/PRO 7" LIKE STEALING Pull-featured transportable package; NEC



V20-8 (or Intel 8088-2) CPU: 4.77/8 MHz switchable clock: 640 KB of RAM on the motherboard: snap-on, 83-key keyboard, with soft-touch keys; integral 9-inch monochrome monitor; 8 full-

LAP/PRO 10" POWER PORTABLE



Ranks with most advanced lap tops on the market; 16-bit Intel 80186 CPU, running at 4.91 MHz; 640 KB of RAM: two 5.25 inch 360 KB floory disks: integral, back-lit 80 x 25 blue Super Twist LCD screen: 88-key enhanced keyboard; 96-pin expansion port;

serial, parallel, and RGB ports; only 17 pounds. LAP/PRO 11™ \$2999. Like LAP/PRO 10 but with one 5.25-inch, 360 KB floppy disk and one 20 MB hard disk!

FREE MYSTERY SOFTWARE

With every system purchased, regardless of price, AMT gives you

\$200 worth of free software for business and fun! BONUS SOFTWARE AMT gives you the best professional-quality bundled software deal in town. Here's how it works:

YOUR HARDWARE PURCHASE	COST OF EACH BONUS SOFTWARE PACKAGE
Up to \$1,999	\$49.95
\$2,000 to \$4,999	\$39.95
\$5,000 or over	\$29.95

Bonus software packages

- . LE MENU by Bartel Software: powerful, menu-driven, hard-disk manager; offers over 35 features. "A superior front-end to DOS" -APUG Tutorial. "Extremely easy to use" -Computers Today.
- POPUP DESKSET + by Popular Programs: full-function calculator, financial calculator, word processor, DOS, calendar, alarm clock, voice, telecom, and more. "Editor's choice"-PC Magazine. "Overall best"-Software Divest.
- VP PLANNER by Paperback Software: flexible, versatile spreadsheet calculator. "Bests 1-2-3 on features" -PC Magazine. "Pacesetter of the year" -PC World.
- · VP-INPO by Paperback Software: powerful, high-speed database manager, with built-in compiler: reads and writes dBASE files. "Has a nice blend of what most database users want"—Data Based Advisor. THE SECTION AND THE TRANSPORT SERVICES IN A SECTION OF

- · VP-GRAPHICS by Paperback Software: powerful, sophisticated object-based drawing, charting, and presentation graphics program. Just released.
- · ABOVE DISC by Tele-Ware West. Provides access to 8 MB of simulated, paged memory via virtual storage. "A 'must' for people contemplating using EMS. Hot stuff"-PC Magazine.

helps keep downtime down.

AMT offers complete service for its personal computer products nationwide through TRW. Service contracts may include system installation and extended warranties. And our own AMT Service Hotline

DO-IT-YOURSELF AMT's simple, flexible I EASING leasing plan lets you pay for your equipment as you use it. No money down and low monthly payments. You write your own terms.

CONTACT AMT For information on AMT products. service, or leasing plan call: Headquarters (714) 731-6800 Los Angeles (213) 477-6320 . San Francisco (415) 490-7967 TWX 5106003265 AMT USA . FAX (714) 731-0109 TO PLACE AN ORDER CALL (800) 338-7110

Credit Cards Accepted VSA CONTEST

PICK A NEW SUIT FOR AMT ir. And Win A Fabulous LAP/PRO 174 Pull-Restured. Battery-Portable IBM-Compatible Lap Top Syste



CONTEST RULES Now that AMT je has had to give up his clone suit, he needs you to help him select a new outfit. Here is how you can help him:

- Describe in 25 words or inst the kind of our you think would be appropriate for AMT in
- Send your description together with the content registration form below to AMT. Rome must be filled out completely. You must be at least 18 years old.
 - You must be a business or profe person, or an employee of a bus

Type of business or profession

- Only one entry per purson is silo reston must be submitted on the red form in this ad. Fectimiles and
- - - - Engineer of AMT or In do

State	Zip
	State

rve a personal compute	r yes □	no 🗆
	AMERICAN	MICRO

TECHNOLOGY CORPORATION 14751 Franklin Avenue, Tustin, California 92680

Ih

COMMITTED TO PRINT

Welcome to the world of printers...welcome to the world of Print860, specialists in a full circle of service for printers and printer accessories. You see...

Print360 is unique; printers are our only business. Our salespeople are trained experts in printers and their applications. They are prepared to answer any questions you have concerning printers—from configuration to software and hardware compatibility. Plus we go that extra step ...

Print360 makes sure that when you order a printer, you receive everything you need to run. All the cables, interfaces, everything. In fact, we're so concerned with getting you the proper printer and equipment, we may ask you more questions than you ask us!! Which is why...

Print860 does the best we can to ensure the printer you receive will be compatible with your software and hardware package! It's just part of ...

Print380 - an authorized distributor, with enormous buying power, specializing in printers. When you buy from...

Print360, you're buying more than just a printer. You're buying a printer from a company as committed to

print as you are to your job.

30 DAY Prints60. REPLACEMENT Committed to print. GUARANTEE'







ed versatility, this one's for you!! This printer has 3 speeds for 3 libraries 5 printers in one! It can produce up to 550 cps. handle return. A factory configured III of compatible model available with SESSO. Friction and tractor feeds for smooth sailing. 2410 Plus List Price 2550 Gur Price \$1759



dustry standard? This second generation of Laser Jet printers from HP is bile with the original Laser Jet and Lear Jet Plus printers, but it is 36% more reliable, does more, and cost less! This whipper-quiet printer now risk 5 internal facts, so you can customiss the printing convironment. Con-puted to the printing of the printing convironment. Con-puted and output trays is well in Laser Let I to this convironment. as friction feed. Laser Jet List Price \$2596 Our Price \$1949

Never a surcharge for American Express, Visa or Mastereard. Credit cards are not charged until after your order has been shipped. No soles tax on orders shipped coulde NY State. Please add 2% for instance, and handling (\$3.00 minimum). Delective merchandise can be returned for repair or exchange quience call for R.A. no.) All process and products subject to change without notion.

RDER TODAY CALL TOL



From the company that has been as A form as Will 1000 as required from the preference of the preferenc



eries or electricity, specially designed to be portable, so you won't Even prints on transparencies. Beliable tractor feed helps get the r laptops and desktop use between office, home, or client. 150-P List Price \$479 Our Price \$339



From Epson, the price performance answer to your business printing. Cap line gives you a higher resolution for Epson Graphics, IBM Graphics, or Dial friction fed. Use the 1000 if your nec-minimum.

Another 3-in-one printer, we feel this has the highest quality "Letter Quality" dos matrix printing available: it even prints on 6-part, formal. Accepts type front cartridges and down-loadable if eye four disks. Emulsales IBM Graphics Printer and the Qume Sprint II. Complete with auto paper loading and friction feed.

PSS1 Last Price \$1899 Dur Price \$999



With 24 resident fonts, this is a typesetting dream!! High resolution, plus 4 paps bandling options puts this printer a step above the rest. Epson LQ series software compatible; color kit upgrade and added memory available. Uses a standard for the foot. The DESS side multi-color memory available. Uses a standard for



sulation, quest mode, lines per inch, page length, and more, all at Fanfold by-pass eliminates the need to unload the continuous sing single sheets. Standard emulations include IBM Proprinter tion. Fanlog try-pun communications include IBM Proprinter or using single-best. Standard emulations include IBM Proprinter time. Paper is det through tractor feed for continuous forms also acting, single-short guide. SELS IL start Price 7479 Our Price \$559 P341SL (set shows) List Price 5999 Our Price \$749.

CIRCLE 329 ON READER SERVICE CARD print36C

We also carry a complete line of HP, Epson, Okidata, NEC, Toshiba, Brother, Citizen, Panasonie, and Canon We have a complete rejection of cut about feeders, traction, sheet guides, cables, buffers, and accessories.

1 West Main Street, Smithtown, NY 11787 1-800-543-TYPE

"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are this man's lawful prev

- John Ruskin



MONOGRAPHIC SYSTEM

· PHOENIX BIOS

220W POWER SUPPLY

* AT STYLE KEYROARD

. 1 2 MB III neey neut

· MITEL BOOKS CPULS MH7/10 MH7 SWITCHUS F

- 1024K RAM (120 NS) ON MOTHER BOARD

CLOCK/CALENDAR WITH PATTERY RACK LIP

. DUAL PLOPPYHARD DISK CONTROLLER

HIGH RESOLUTION MONOGRAPHICS ADAPTER

12" HIGH RESOLUTION, FLAT SCREEN MONITOR

EVERLEAD...WE MAKE A DIFFERENCE NATIONWIDE ONE YEAR ON-SITE SERVICE for our lim-

ited warranty - Everlead Systems, Inc. warrants the personal computer systems it manufactures to be free from defects in materials and workmanship for one year following the date of shipment from Everlead Systems, Inc. During the one year warranty period, Everlead Systems, Inc. will repair or replace, at its option, any defective products or parts through one of its 300 service centers cross the country at NO ADDITIONAL CHARGE. Our service centers have less than 4 hours average response ON-SITE. 30 DAY TOTAL SATISFACTION GUARANTEE - Any syste

bought from Everlead Systems, Inc. may be returned within 30 days from the date it was shipped from Everlead Systems, Inc. for a full refund of your purchase price of the system.



EVERLEAD TURBO AT

\$1,599 EGA COLOR SYSTEM \$2,099 · INTEL ROOMS CRIL & MHZ/10 MHZ SWITCHARLE · PHOENIX BIOS

- . 1024K RAM (120 NS) ON MOTHER BOARD
- · CLOCK/CALENDAR WITH BATTERY BACK UP
- 220W POWER SUPPLY · AT STYLE KEYBOARD
- 1.2 MB B DRBY DBME
- . DUAL FLOPPY/HARD DISK CONTROLLER · ENHANCED GRAPHICS ADAPTER
- . 14" HIGH RESOLUTION, EGA MONTOR

20 MB MONOGRAPHIC SYSTEM · SAME MONOGRAPHIC SYSTEM FEATURED ABOVE · SEAGATE 20 MB HARD DISK DRIVE (65 MS

\$2 690

30 MB MONOGRAPHIC SYSTEM \$2,199

· SEAGATE 20 MB HAPO DISK DRIVE HO MS: 40 MB MONOGRAPHIC SYSTEM \$2,298

 SAME MONOGRAPHIC SYSTEM FEATURED ABOVE BUS. · SEAGATE 40 MB HARD DISK DRIVE HO MS

80 MB MONOGRAPHIC SYSTEM SAME MONOGRAPHIC SYSTEM FEATURED ABOVE, PLUS · SEAGATE 80 MB HARD DISK DRIVE HD MSI

20 MB EGA COLOR SYSTEM \$2 299 · SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS · SEAGATE 20 MB HARD DISK DRIVE HIS MS

30 MB EGA COLOR SYSTEM \$2,600 · SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS

. SEAGATE 30 MB HARD DISK DRIVE (40 MS) 40 MB EGA COLOR SYSTEM \$2,799

· SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS · SEAGATE 40 MB HARD DISK DRIVE (40 MS)

80 MB EGA COLOR SYSTEM \$3,199 · SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS . SEAGATE 80 MB HARD DISK DRIVE (40 MS)

MONOGRAPHIC SYSTEM \$ 870 EGA COLOR SYSTEM

EVERLEAD TURBO XT INTEL 16 BIT 6088-2 CPU, 4 77 MHZ/8 MHZ SWITCHARLE INTEL 16 BIT 6088-2 CPU, 4 77 MHZ/6 MHZ SWITCHARLE . PHOENIX BIOS

- . 640K RAM ON MOTHER BOARD
- 180W POWER SUPPLY · AT STYLE KEYROLEO
- · NOW DITTED Y DON'T
- . MULTI-I'D BOARD W/F PRAALLEL/SERAL/GAME PORTS, BATTERY BACK UP
- **CLOCK/CALENDAR**
- HIGH RESOLUTION MONOGRAPHICS ACAPTER . 12" HIGH RESOLUTION FLAT SCREEN MONTOR
- 20 MB MONOGRAPHIC SYSTEM \$1 279 · SAME MONOGRAPHIC SYSTEM FEATURED ABOVE
- SEAGATE 20 MB HARD DISK DRIVE (65 MS) WITH CONTROLLER
- 30 MB MONOGRAPHIC SYSTEM
- . SAME MONOGRAPHIC SYSTEM FEATURED ABOVE. SEAGATE 30 MB HARD DISK DRIVE 65 MSI WITH RLL CONTROLLER
- 40 MB MONOGRAPHIC SYSTEM \$1,689
- · SAME MONOGRAPHIC SYSTEM FEATURED ABOVE · SEAGATE 40 MB HARD DISK DRIVE 65 MS WITH

- \$1,379
- · PHOFAIX BIOS
- . 640K RAM ON MOTHER BOARD 180W POWER SUPPLY
- · AT STYLE KEYBOAFD . serv p negy news · MUTHOR BOME W/FI
- PARALLEL/SERIAL/GAME PORTS. BATTERY BACK UP CLOCK/CALENDAR
- . ENHANCED GRAPHICS AGAPTER • 14" HIGH RESOLUTION, EGA MONITOR
- 20 MB EGA COLOR SYSTEM \$1 779
- . SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS. SEAGATE 20 MB HARD DISK DRIVE (65 MS) WITH CONTROLLER
- 30 MB EGA COLOR SYSTEM \$1,829 - SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS. . SEAGATE 30 MB HARD DISK DRIVE (65 MS) WITH RILL CONTROLLER

40 MB EGA COLOR SYSTEM \$2,199 . SAME EGA COLOR SYSTEM FEATURED ABOVE, PLUS

SEAGATE 40 MB HARD DISK DRIVE 65 MS; WITH

OPTIONS AND ADD-ONS

CONTROLLER

* NICE MORT PAYANT COPROCESSION*

• 12 MB ROOPY DRIVE

• 360 KB ROOPY DRIVE

20 MB ARCHIVE TAVE DRIVE

• 60 MB ARCHIVE TAVE DRIVE

• AT 1/0 BOARD (SEREL) PRRALLEL/GAME PORT

TERMS: All returned items must be as new not damaged or modified, with all manuals, werranty cards, and packaging intact. Returned items must be shipped prepaid and insured. and must have a Everlead Systems, Inc. Credit Return Authorization (CRA) number on the shipping label. Everlead Systems, Inc's limited warranty does not cover accidental damage, misuse, misapplication, or damage resulting from modification or service other than an authorized Everlead service center

AF MULTIFUNCTION BOARD (DK. EXPANDABLE TO 3 MB, SERIAL/PARALLEL/SAME PORT) PARADISE AUTOSWITCH ITAXAN 560 EGA. 2400 BAUD INTERNAL MODEM HAVES COMPATIBLE: ENHANCED ID1 KEYBOARD

 MS, DOS 3 20 W/GW SASK EVERLEAD SYSTEMS, INC. OUTSIDE CA - 1 (800) 654-4189

16490 HARBOR BLVD., SUITE A INSIDE CA - 1 (800) 223-9213 FOUNTAIN VALLEY CA 92708 SERVICE DEPT - 1 (714) 775-8621 HOURS: MONDAY-FRIDAY 8:00-5:00; SATURDAY 10:00-5:00 PACIFIC TIME

Searching For Solutions



Decision support programs can give you answers. They can also present risks.

ccision support software (DDS) may lack the familiar ring of spreadsheet, database, or word processing, but it describes a class of managerial support programs that are working their way into business environments.

Decision support programs deal with specific issues at specific times and point you to a single, logical conclusion. Do we locate the regional warehouse in Baltimore, Maryland, or in Scranton, Pennsylvania? Should I buy a Volkswagen, or would a Cadillac be a better choice?

DSS systems are different from expert systems, which capture the experience of an expert and rely on that expertise to walk you through your dilemma to solve a problem. Expert systems help solve similar problems that follow predicable rules. One such example is medical diagnostic programs, which are being used to assist energency medical teams in some locations. These programs engage the patient in a dialogue with the computer to identify symptoms and probable causes of an aiment. In contrast, DSS systems are used for solving problems that are not similar. They don't replace the except they merely

DUELING DSS DSS packages have been used on Capitol Hill. Prism, one of the programs reviewed in this article, was used by both sides in a debate over whether to allow oil exploration in a wildlife refuge on the Alaskan North Store.

help him do his job better.

The question pitted environmental groups against oil company interests. Last year, the U.S. Department of the Interior published an analytical model on the question. It concluded there is about a 19 percent chance of finding oil in the area; and if there is oil, it will be worth between \$3.9 billion and \$6.7 billion.

Dr. Thomas Goerold, an economist with the Wildemes Society in Washington D.C., used Prion to challenge the Department of the Interior's figures. His model, which contains about 80 equations and 30 variables, takes between an hour and 29/hours to run on a 10-MHz AT compatible. It is based on the department's estimate: and 18 percent chance of finding no oil and, conversely, if there is oil, procietous of the defining olds a which you

would find larger amounts; a 99 percent chance of there being at least 490 million barrels, a 95 percent chance of 590 million, an 85 percent chance of 1.12 billion, a a 50 percent chance of 2.12 billion, a 25 percent chance of 4.2 billion, a 5 percent chance of 9.24 billion, and a 2 percent chance of 17.19 billion.

Preliminary figures in Goerold's model indicate that this oil is worth less than one-third what the Department of the Interior estimated, or between \$320 million and \$1.3 billion. The department had assumed that oil would sell for \$33 a barrel instead of \$18, the price current when Goerold ran his model.

na monest.

In monest en many ways to make desistions, and the ten DSS packages,
stooms, and the ten DSS packages,
stooms, and the ten DSS packages,
was designed upon one of three different approaches to decision making: decision matrices, linear programming, or
Monte Carlo simulation. A decision matis forms the basis for five of the ten: Decision, Decision Aide, Expert Choice,
Light Year, and Decision Modeling, Of the
others. Arborist is a decision tree, Walst's
Esert loses linear programming, 'Frism and
tion, and Confidence Factor involves a
combination of techniques.

DECISION MATRICES There are serval distinct steps to using a decision matrix. You list a number of alternative solutions to a problem, then list the attribute that pertain to each alternative. For example, when choosing a car, the alternatives might be Volkswagen, Ford, and Cadillac, and the attributes might be initial cost, trade-in value, and prestige.

Once you've listed the attributes, you must specify how important each attribute is. You could decide that initial cost is twice as important as trade-in value, for example, and that trade-in value is twice as

important as prestige.

The last step is to tell the program how

each alternative scores with respect to each attribute. A VW is cheap, so it scores high on initial cost, while a Cadillac scores low. A VW scores low on prestige, but a Cadillac scores low on prestige, but a Cadillac scores low on prestige, but a Cadillac is decadent and impractical), and so on. After you specify all the attribute values for each alternative, the

IMAGINE YOU MAKE MUFFINS

The mathematic techniques of linear programming can point out the optimal solution to the question of how much to produce given your present inventory,

Inear programming is a technique

If or determining the mathematically
optimal solution to a problem. It can be
used in situations in which resources are
combined or consumed in different ways
to give different results.

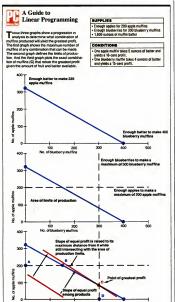
Imagine that you are a muffin maker. Vou have enough appels or 200 appels muffins, enough blueberrier for 300 blueberry muffins, and enough ingedients for 1,600 ounces of muffin batter. One apple muffin takes? Once apple that and yeleks a 16-cent profit. Does blueberry muffins takes 4 moces of batter and yeleks a 15-cent profit. How many of apple that the profit is the second of the profit is the profit in the profit in the profit is the profit in the profit in the profit in the profit is the profit in the profit

that won't get you the highest profit. The first step in solving the problem is to find its constraints. The vertical axis in the three graphs at the right represents the number of apple muffins, and the black dotted line at 200 on the vertical axis is the maximum number it's possible to make with the apples on hand. The black dotted line at 300 on the horizontal axis is the maximum number of blueberry muffins you can make with the blueberries on hand. However, you can't make 200 apple muffins and 300 blueberry muffins because you don't have enough muffin hatter. That would take (200 × 5) + (300 \times 4) = 2.200 ounces. Sixteen hundred ounces of batter is enough to make 320 apple muffins $(320 \times 5 = 1,600)$ and zero blueberry muffins or 400 blueberry muffins and zero apple muffins, It's also enough to make any combination of muffins along the blue line on the chart that joins these two points.

Now all the limits to production are plotted. You can make any combination of quantities of apple and blueberry muffins that falls within the area bounded by A. B. C. D. and 0 on the chart. But what's the combination that will yield the greatest profit? You can figure that out by first determining the slope of the line that represents profits. If, for example, you made 150 apple muffins and no blueberry muffins, you would get a profit of \$24 (150 × \$.16). To get that same profit by making only blueberry muffins and no apple muffins, you'd have to make 160 (\$24/\$.15) of them. The short red line on the chart joins those two points and shows every combination of apple and blueberry muffins that will yield a profit of \$24.

Clearly, the more muffins you make and sell, the greater your profit, so you move the red line out, maintaining the same slope, to the point on the plane ABCDO that is farthest from 0. That point is C. which represents a combination of 300 blueberry muffins and 80 apple muffins, and gives a total profit of \$57,80. No other possible combination of muffins will yield as great a profit.

This simple example would be easy to work out by hand. However, if there were more than two kinds of mufflin, or more ingredients to be shared between them, the problem would quickly become more complete. It would be impossible to graph the problem in only two dimensions, and the only quick, sare way to not've it would be limited programming. The formulae and the process would be the process would be in o a supplementation of the process would be in the process would be into the process which would be into the process wo



program calculates a score for each alternative, and you pick the choice with the highest score.

highest score.

This method of deciding is called a decision matrix: you list the choices across the top and the attributes down the side, and then you put numbers for attribute values into each square. The scores for the alternatives are nothing more than the sum of the numbers you put in the squares. If you put silly numbers in the squares, you'll get silly results: garbage in, garbage squares.

Obviously, you have to consider pluses and minuses when you make a choice. High prestige is a plus, high cost is a minus, and you'd like to be able to express them differently. All the decision matrix products we reviewed make you rate attributes on a positive scale only: 0 through 9 or 1 through 100, for example. But this means that you can't use negative numbers to evaluate costs or risk. One vendor suggested that you use the term safety instead of risk, or economy instead of cost, so that you can always use positive numbers, but this is a kludge. Eliminating negative numbers makes the program simpler, but it may keep you from expressing the elements of the decision the way you'd like.

Decision matrix programs typically let you divide criteria into musts and wants. Musts are used to rule out unworkable alternatives, and wants are used to rate the survivors. An alternative either meets a must criterion or it doesn't, while it may meet a want criterion to any deeree.

You can use the same criterion as both a must and a wan. Suppose you can spend a maximum of \$10,000 on your new car. The value of the cost attribute must be less than \$10,000, so this is a must. A car costing \$8,000 is better than a car costing \$9,000, even though both meet the must criterion. Establishing a want that the cost be minimized gives extra points to lower cost.

USFFUL ALTERNATIVES Most DSS programs do not accept 'failed' 'must ai-tributes, since they assume that you wouldn't bother to deal with them. How-wer, programs that do so give you the flexibility to consider more choices and to make a more complete analysis. In some situations, you may want information on choices that don't meet you resential must

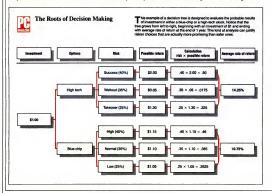
IDENTIFYING THE REAL RISKS

By helping you understand the odds as well as the payoff, the decision tree approach can embolden managerial decisions by pointing out the real risk in risky choices.

A decision tree is a picture of a decision and uses probability to help you make the best choice. Like all decision support techniques, it is only as good as the data you put into it, but its very structure forces you to think clearly.

In deciding whether to invest in a blue-chip or a high-tech stock, the tree "grows" from left to right, beginning with an investment of \$1 and ending with six different possible results at the end of one year. Not all results are equally likely. After studying the high-sech company, you for ure there is a 40 percent chance it will dobet to \$2. You also figure there's a 35 percent chance that key employees per walk out and start their own company. If they do, the stock will plummet and you dollar will be worth 5 cents. Finally, you on figure there is a one-in-four chance of company will be bought out and you'll make a 30-cent moft on work dollar. According to your analysis, the blue-chip investment could also vary between a 15 percent and a 5 percent return, depending on whether the company has high, normal, or poor profits. For either investment, the probabilities of the different outcomes have to add un to 100 percent.

Assuming these are all reasonable predictions, which investment makes more sense? You evaluate a decision tree by working backward from right to left. Thus, to get a value for the high-risk in-



vestment, multiply each possible dollar outcome by its corresponding percentage and add up all three:

 $(\$2.00 \times .40) + (\$0.05 \times .35) +$ $(\$1.30 \times .25) = \1.1425

This gives you a weighted average of all three values. If you do the same arithmetic for the blue-chip stock, you'll see that its weighted average is \$1,1075. The two branches have different values. which suggests that, on average, the high-tech, high-risk investment should yield 14.25 percent, and the safer, bluechip investment only 10.75 percent. Normally, you would choose the branch with the highest value.

usinessmen make the blue-chip investment even if they'd be better off taking more risks.

It's important to remember that neither of these numbers is the same as any of the six predicted results-they're only averages, that show relative advantages of each choice. Decision trees don't give precise results. Instead, they suggest which choice looks best, overall

This kind of analysis can justify riskier choices that are actually more promising than safer ones. In many businesses, no one will approve a project if there's even a small chance it will be a disaster, because one disaster can ruin a career. Businessmen make the blue-chip investment even if they'd be better off taking more risks. However, if they did careful tree analyses, and if their supervisors understood the odds as well as the payoffs, there might be less of a stigma attached to failure and more bold decisions. -Jared Taylor

MONTE CARLO SIMULATION

Gambling is always risky, but when the options seem to lead nowhere in particular, you may want to turn to the odds-maker's technique.

his simulation technique got its name from the gambling resort at Monte Carlo, where the fundamental principles of statistics were discovered by gamesmen more than 100 years ago.

The original research had a simple goal: beat the house. The project failed and the casino's profits rolled screnely in, but researchers discovered the "law of large numbers," which says that you can figure out the characteristics of any apparently random process if you make enough trials. That was difficult to do before computers came along.

Even with computers, simulations tend to run for a long time. There is a great deal of arithmetic involved in computing several thousand different distribution numbers. Depending on what kind of machine you have, it could run all night if you need to solve a complex problem. Once it's done, an advanced simulation package can process the results in sophisticated ways and plot different probability distributions.

Monte Carlo analysis gives answers when you don't have the exact numbers needed for linear programming or decision trees. Suppose you plan to make toasters and irons. The time needed to make a product is not fixed: some toasters and irons will be defective and will need rework, while others will sail right through.

Suppose that 20 percent of the toasters and 10 percent of the irons will need re-

work. Sometimes rework may take 10 minutes, sometimes 15 minutes. If you want an estimate of how many irons and toasters you can build in a day, you need to know the average production time.

Monte Carlo analysis lets you define the problem in various ways. You can say that the time to rework a toaster is equally likely to be either 10 or 15 minutes; or you can say it varies between 10 and 15 minutes, with 12 minutes most likely; or you can say it's 60 percent at 10 minutes, 30 percent at 13 minutes, and 10 percent at 15 minutes; or you can tell the program to use a built-in probability distribution function.

If you use distributions, you have to understand which one fits your problem. Experience shows, for example, that shaft and hole sizes tend to have normal distributions, customer arrivals at banks or barbershops have Poisson distributions, noise bursts on telephone lines have shot-noise distributions, and so on.

After you have entered the process model, the program generates appropriately distributed numbers to simulate irons and toasters passing through the factory, then it measures the time each takes. After enough trials (perhaps several thousand), it computes the average assembly and finishing time per product. These numbers can be plugged into decision trees or linear programming packages or can be used as weights in decision matrices.-William Taylor

criteria: if you ignored them, you may nevoverall score that you decided to bend your er realize how good they might be. For exmust criteria and buy it anyway. ample, suppose you find a car that costs Suppose the DSS analysis indicates that \$10,500. Since that figure violates your must criterion, you couldn't enter it into a decision matrix that disallowed failed must

the Volkswagen wins over the Cadillac. It might be interesting to know that a small change in the Cadillac's resale value or the VW's initial price would change the rating. Sensitivity analysis tells you how sen-

Tomorrow's Technology



British Control of the Control of th

Helpful Sales Staff

Our sales staff is trained to help you choose the computer system that best suits your unique application.

Quality Assurance With 48-hour burn in

We custom build each computer system to your specifications, then submit the unit and add-on boards to an intensive 48-hour burn-in test procedure. This all-unit test is our assurance that you receive the reliable, quality product you deserve.

Technical Support United Solutions maintains a staff of skilled, knowledgable

United Solutions maintains a staff of skilled, knowledgable service technicians to answer your technical questions so you get the most out of your United Solutions computer system.

Knowledgable



Prompt, Free Delivery

We ship most systems UPS ground to anywhere in the continental U.S. A. (except Alaska) within 24 hours after the burn-in period, and at no extra charee.

Limited Warranty

We warranty our products to be free of defects in material and workmanship for a period of one year from the date of shipment. The warranty covers the cost of all materials and labor.



Superb Customer Support



Thirty-Day Money-Back Guarantee

You can return any United Solutions computer system within thirty days of the date of shipment. Return the items like new with complete documentation, warranty cards, and packing material. Return product must be labeled with a Return Merchandise Authorzation (RMA) number and shipped prepaid and insured.

UNITED SOLUTIONS

1-800-548-8789

1107 Main Street Georgetown, Texas 78626

In Texas: 512-258-9941 Tech Support: 512-258-3588

Quality Solutions for



United-286/12 ■ 80286 processor

- 1MB ŘAM
- Dual-speed 6MHz-12MHz
- 200-watt power supply
- Eight expansion slots
- One 1.2MB floppy drive
- Dual floppy/hard drive controller
- Keyboard Illustrated manual
- One-year warranty

Base \$1395 System \$1395

Monographics System

■ Twelve-inch, flat screen monitor with tilt

\$1555 and swivel base. ■ With 40MB MiniScribe

hard drive model 6053. \$2095 28ms access time.

EGA System

■ EGA color monitor \$1975 with 14" screen.

■ With 40MB MiniScribe hard drive model 6053, 28ms access time.

\$2525

United-286/10 ■ 80286 processor ■ 10MHz processing speed

- 512KBRAM
- 200-watt power supply
- Eight expansion slots
- One 1.2MB floppy drive
- Dual floppy/hard drive controller Keyboard
- Illustrated manual
- One-year warranty

Base \$995 System Monographics System

■ Twelve-inch, flat screen monitor with tilt

\$1155 and swivel base. ■ With 40MB MiniScribe hard drive model 6053,

\$1695

28ms access time. EGA System

■ EGA color monitor \$1575 with 14" screen.

■ With 40MB MiniScribe hard drive model 6053, \$2125 28ms access time.

United-286/8 ■ 80286 processor

- Dual-speed 6MHz-8MHz
- Space-saving compact chassis
- 512KBRAM ■ Phoenix BIOS
- 200-watt power supply
- Eight expansion slots ■ One 1.2MB floppy drive
- Dual floppy/hard drive controller Keyboard
- Illustrated manual One-year warranty

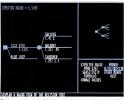
Base \$895 Monographics System

- Twelve-inch, flat screen monitor with tilt
- \$1055 and swivel base. ■ With 40MB MiniScribe
 - hard drive model 6053, \$1595 28ms access time.
- EGA System EGA color monitor \$1475 with 14" screen.
- With 40MB MiniScribe hard drive model 6053, \$2025 28ms access time.

■ DECISION SUPPORT

LOOKING AT THE OPTIONS

By just looking at the ten decision support programs, you can see four different approaches they use in making a decision.



The large window at the left of this Arborist screen enlarges part of the decision tree. The entire screen is displayed on the right.



Decision displays values of attributes and alternatives as a matrix in which it is easy to scroll around.



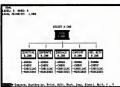
The list of alternatives that The Confidence Factor gives you can be frustrating. You have to scroll through all of them to change just one.



Decision Aide II's main menu was designed for a computer with a touch-screen, which is why the choices are widely separated.



This Decision Modeling screen shows the normal Framework menu at the top and Decision Modeling's own menu at the bottom.



Expert Choice uses a tree structure as the user interface to a standard matrix. It's helpful for large decisions but easy to misuse.



The What's Best! menu pops up when you call the program with a hot key. Linear programmers will feel at home with the program.



Light Year lets you enter graphics data instead of numbers, but it sets all numbers back to zero if you change from numbers to a graph.



ne menus used to execute vrestict: s move commana cover nearly half the spreadsheet. The back Quote key removes them.



Prism plots a triangular distribution graph, which here represents the possible values of "awantity sold." Here the most likely case is \$43.

LAN Dream Come



Easy & Affordable

cause rightmares, But now, EasyNet is a networking dream come trual EasyNet's straightforward approach and simple DOS commands provide CONNECTIVITY not confusion.

EasyNet saves you valuable Time & Money by providing these dream like

features:

• Easy installation program

• Easy growth from 2 to 200 stations

• Direct PEER-TO-PEER network

No dedicated file or print serversf
Sharing of all disks & pariphials
Complete Printer Spool/Queue Control

Prices from \$89 per node
 Net Bios compatible
 EasyNet II Software only network.

Uses existing RS232 ports
 Expandable to EasyNet 118
 EasyNet 116 High speed network

High speed communications port
 Twisted pair wire with speeds to 2 Mbps

Special starter kits are available at a dream-like price of \$169

To order cell or write.

EasyNet Systems Inc.

Ved Value Date: Last 12 to:

Moscopi Office Cells 12 to:

To the US 1-800-337-3207

fin the US 1-800-387-3207 or cell 1-416-273-6410 Oealer & DEM inquiries welcome.

Cropans
Address
Cris
Specture
Cont 8
Specture
Cont 80
Specture
Cont 80
Specture
Cont 80
Specture
Amount
First Massier Charge or Amorrican Express
and of course good old cash,

■ DECISION SUPPORT

sitive your choice is to small changes.

Sensitivity analysis lets you know if your decision rests on small differences between slippery numbers, and it gives you an idea of the quality of the decision. Suppose DSS says that it would take a large change in any attribute to give the second choice a better score than the first office. That means your decision is stable, it won't change if some of the weights of the control of the decision of the suppose of the supp

In the final analysis, all a decision matrix does is sum up weighted attributes of the alternatives. Why can't you do this with a spreadsheet? You can. Just as spreadsheets can be coerced into doing word processing, spreadsheets can be made to function as a decision matrix.

The advantage of a DSS program over a spreadshee is that it walks you through the decision process, making sure you fill in all the blanks. It helps you collect the necessary numbers and tries to make sure the numbers are reasonable. Finally, since these programs are designed specifically for decision making, some can let you handle complicated situations that might get out of hand with a spreadsheet.

One disadvantage of DSS packages is that they don't usually display the whole matrix of attribute values; they ke tyou work with only one row (attribute) or column (choice) at a time. This may be essential for very large, complex decisions, but it's a pain when there are only a dozen or so alternatives and attributes: it would be nice to see the big picture all at once. However, the decision matrix technique does have its humans side. You have to turn your adoptive the feelings into mathems for the adoptive the feelings into mathems for the gories and choices without specifying relationships between them.

Four of the packages in this review rely on linear programming, decision tree, or Monte Carlo methods, or a combination of techniques for decision making (see sidebars ''Imagine You Make Muffins,''''Identifying the Real Risks,'' and ''Monte Carlo Simulation''). When do you use what? In short, if you know relationships

between numbers (in our example, how

much profit you get from each muffin and

how much batter each takes) and the values of the numbers (how much batter you have), use linear programming or decision trees. If you know relationships but not values, use Monte Carlo simulation. If there are no numbers or relationships in the decision, use decision matrixes. Or you could call on the oldest DSS system of them all and flip a coin.

hen it comes to computer models, an

ounce of skepticism is worth a pound of regret.

WATCH OUT FOR DSS To the extent that you can use DSS to make sure that you've covered all reasonable alternatives (and to organize your decision so that others can understand it more easily), it's helpful. To the extent that someone may see DSS as a computerized close of legitimacy for a decision he's trying to slide past you, it's not.

When someone brings you a snazzy computer printout and claims that the "ob-vious" thing to do is make the choice the computer recommends, beware of the result. When it comes to computer models, an ounce of skepticism is worth a pound of

regret. Even with the best of intentions, there is a potentially fatal fascination in the precise probabilities and ratings that DSS grinds out at the touch of a function key. Computer fans often forget that the numbers are a model of the real world, and if the model disagrees with the real world, the real world, with owerld wins.

Computer programs cannot set goals, think up alternatives, assign weights, or evaluate criteria. You have to do that. If you do a poor job of it, there's no computer program that can help you.

Jared Taylor is a contributing editor of PC Magazine. William Taylor is a consultant in artificial intelligence.

Arborist

Arborist, a pure decision tree analysis program from Texas Instruments that sells for \$595, has an uneven combination of strengths and weaknesses. It can build detailed models of decisions and analyze the different elements that go into making them. It also has a convenient link to 1-2-3 that lets you use spreadsheet data in decision trees. However, the program is marred by a clumsy user interface, balky performance, and mediocre documenta-

The models you build with Arborist closely follow the general principles of decision trees. You can design very complex trees with hundreds of branches, as well as build mathematical and logical functions into the evaluation of the tree. For example, you could specify that if, during evaluation, one branch of the tree had a value greater or less than a target amount, this would decrease by half the probability of something happening in a different branch of the tree. This makes analysis more realistic in that events in the "higher" branches of the tree can influence results elsewhere in the model. Besides the four standard math functions, Arborist lets you use exponents and present value/future value, as well as built-in maximum and minimum functions

Sensitivity analysis and the display of probability distributions are other powerful tools. Sensitivity analysis shows how



Arborist, Version 2.2 Texas Instruments Inc. Data Systems Group P.O. Box 2009 M/S 2180 Austin, TX 78760

(800) 527-3500 List Price: \$595 Requires: 512K RAM; graphics; one disk drive (hard disk recommended); DOS 2.0 or

In Short: A sophisticated decision tree analyzer with a data bridge to 1-2-3. Slow on a standard PC; lacks type-ahead capability.

Not copy protected. CIRCLE \$33 ON READER SERVICE CARD

much you have to change one value in order to get a new valuation of the tree that would lead to a different choice. If, for example, you want to know how high the probability of an employee walkout has to

be before the high-tech investment becomes less promising than the blue-chip investment, you could tell Arborist how you'd like to see that probability adjusted, and the program would plot a graph show-





PC Magazine names PC Tools their Editor's Choice. "There's no reason to look beyond PC Tools..."

PC Tools puts together all the popular features of the Norton Utilities* with a powerful DOS interface and makes them resident like Sidekick*. Now includes the best of the MACE™ utilities & FastBack™ as well! So you can execute virtually any DOS command even when you're using another program!

With PC Tools, you can

- UNFORMAT a hard disk
- COMPRESS a hard disk for improved performance. . BACKUP and RESTORE a hard disk FAST.
- · UNDELETE an accidentally erased file.
- FORMAT a disk. · COPY files.
- MOVE files and reorganize subdirectories with ease.
- LOOK at (and even edit) a file.
- . SEARCH for a file name or text within a file. PRINT a file (as text or hex and ASCII).
- And much morel

All without ever leaving your spreadsheet or database manager or word processor or...

System Requirements: IBM PC, PS/2 or compatible, 256K, uses only 64K in resident mode. Supports floopy disks, hard disks and 31/2" disks. (including 1.44 meg diskettes), as well as Lotus/Intel expanded memoryl

To Order: Call 503/244-5782, 8-5 (West Coast time), M-F, with your 185 in hand. Or send a check, include \$3 s/h, \$8 overseas.

\$39.95

DAYYOR POR ATTEN 9700 S.W. Capital Hury., #100

Portland, OR 97219

e beckup utilities for the IBM, Macintosh, Apple II. Commodore 64/128 and Atari ST.

CIRCLE 120 ON READER SERVICE CARD



Where's that piece of paper with his phone number?" "You need the key prospect report in

30 MINUTES?!"
"Why am I just finding out we're two weeks
behind schedule?"
"What did we agree to last time we talked?"

"What did use agree to last time use talkeed?"
"What magazine boat that article use need?"
Only one PC software can answer all of these questions quickly and easily—the
DayFio TRACKER, the first Information Tracking System (ITS) for IBM PC/XT/AT® and
compatibles. Now, at a special introductory price.

companies, stow, at a specia amoducatory in received. The Daylin FRACKER keeps track of all the information you need daily—prospects, clients, projects, schedules, reference books, meeting notes, magazine articles, followups—that no other software can handle, database can't do it. It is no structured. A word processor can't do it. It's not structured enough. TRACKER combines the best of both no nerform a whole new task—reckfine.

Get started immediately with the 50 + standard forms and report formats provided in TRACKER and the handy Application Pack—using simple menus. Customizing forms is

easy too. And reculting records is done maturally using your own combination of key words. No more lost data! Then use the report writer to pint out letters, labels, lists, etc. It's hard to believe so much sophisticardel technology can be so easy to use—and so inexpensive. Order now at the special introductory price or call DayPlo for more information at (800),567-5569. In California (74) 474-2501.



*Except your car keys.

SPECIAL INTRODUCTORY OFFER
First 2500 orders only
DayFlo TRACKER plus Application Pack
(\$180,901 alue) \$99,95

3	Enclosed is my check/money order payable to:	Day Flo Softwa

☐ Please charge my.	P. Manager	CT Atten		
□ Please charge my.	□ Matercard	U VISA		
Card No.		Exp Date	- Shipping	
Signature (Charges Or	dy)			5
Name			(U.S	Canada & Mexico \$5.00
			_	Elsewhere \$15.00
Address			 California resid 	ents
City	_ State	Zıp	add 6%:	1

Mail to: DayFlo Software, 1^a701 Mitchell Avenue North, Irvine, CA 92714. Sales/Order Information: 1-800-367-5369. In California: 1-714-474-2901. Not copy protected, 30-day money-back guarantee.

Requires DOS, 584K RAM and hard disk on IBM PC or compatible IBM PC/XT/AT are registered trademarks of International Business Nachines Corporation

■ DECISION SUPPORT

ing how the different results could affect your decision.

Probability distributions let you take a closer look at results. In order to let you study each option in greater detail, Arborisr lets you set up graphs that show the various probabilities of the possible outcomes from any point in the tree.

Arborisi's interface with 1-2-3 makes it easy to use spreadsheet data in a decision tree. Without leaving Arborist, you can modify a 1-2-3 model, import cell values into your tree, and even run 1-2-3. Thus, without exiting Arborist, you could do calculations in 1-2-3 and use the results to determine values for your decision tree.

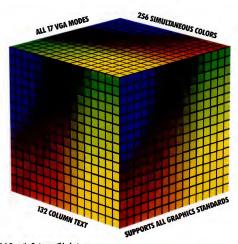
SLOW-MOVING TREES However, all this tree power is badly compromised. Arborist is written in IQLISP, which may be a great AI language but doesn't seem suited to the straightforward arithmetic of a decision tree. On anything other than an AT, Arborist is agonizingly slow. Just moving from one menu to another is slow. And you can't type ahead of the program even if you know what your next three menu choices will be-Arborist just throws your keystrokes away. Furthermore, IQLISP apparently has to take time out every so often to clean up memory. It flashes a "Reorganizing" message and freezes the screen for half a minute.

Arborist runs on both CGA and EGA machines, but isn't recommended for a plain color/graphics monitor. In order to got near-80-column text as well as graphics, Arborist draws its alphabet in pure graphics rather than using a standard character set. This makes for a ragged appearance that is much improved with an EGA monitor.

Finally, the command structure is sometimes inconsistent, and neither the manual nor the skimpy help screens are very clear. You have to do a lot of tinkering if you want to figure out how to use many of Arboris's powerful built-in functions. Texas Instruments appears to have recognized this problem. A new manual was scheduled for release this summer.

If you have \$600 to spend, a 12-MHz AT with an EGA, and can get your hands on an improved manual, you could end up with some pretty sophisticated decision support.—Jared Taylor

ANNOUNCING VGA EXTRA



STB delivers the first compatible, feature rich Video Gruphics Array™ (VGA) display adapte:

Now you can take advantage of the newest, most advanced graphics standard with 256 spectacular colors from an incredible palette of 262,144 choices.

Along with vibrant colors you have to see to believe, STB's superior technology implements all 17 VGA modes at the BIOS level. That guarantees compatibility with VGA software, from business graphics to desktop publishing to CAD/CAM applications. All that the VGA standard has to offer, plus important extras:

All that the VGA standard has to offer, plus important extras:
full compatibility with established video standards; automatic mode

Compatible with IBM FC. XT. AT* and PS-2* Model
200. and you get all 17 VGA modes. Including

EGA, CGA, MDA and

230 x 200 6 x 600 x 480 7 720 x 400

320 x 200 640 x 480 720 x 400 Hg
255,144 or 64 16 colors from shades of gray 365,144 or 16 shades of gray E.

dual video connectors so you, and we'll send you a f you can use the VGA Extra'' with the new seneration of IBM:analog

monitors as well as with current popular monitors such as the NEC MultiSync." The VGA Extra even provides 132 column text support for spreadsheets and terminal emulation on variable frequency monitors.

Comy STB combines the latest VGA capabilities with all the extras you need for today's extras you need for today's extras you need and only of the extrast you need and all the extrast you will not seen and ask for STBs VGA Extra Or call STB today at (24) 234-8750. Well give you the name of the authorized STB dealer nearest you, and well send you a full



Jib Systems, me.

172 TCA Extra registral registrate of 573 feature. For 18M Tube English Arms, Formacl Science; PL, XZ AT registred in Benedit registrant of Norwice Computer Technology, NEC Multilion tradement of NEC Mone Electrons.

Nobody ever thinks of PC AT batteries until it's too late.



Without a functioning battery, your computer is as good as dead The battery in your PC AT or compatible controls your computer's configuration files, real time clock and calendar. When the clock and calendar begin to fail. your battery's hours are numbered.

So be prepared. Get the best replacement battery you can buy. Get a TADIRAN battery from IBC - the high quality, high energy lithium battery that is already found in 80% of all PC AT's and compatibles as original equipment.

A unique 3 year warranty, 10 year shelf life, and UL approval make a TADIRAN replacement battery the best insurance there is. So don't wait until your computer battery dies. Get a TADIRAN replacement battery from IBC today.

ORDER NOW! 800/654-3790 (US) 800/225-9359 (CA) Price only \$27.50

· Dealer inquiries welcome. Corporate discounts available

For IBM PC AT, Compag 286, and all other AT compatibles and clones. Checks, money orders,

and credit cards welcome. Add \$3.00 for shipping and handling.

International Battery Corporation 6860 Canby Avenue. #113. Reseda, CA 91335 818/609-0516, (TLX 6975427+)

IBM AT, and Compaq 286 are respective trademarks of IBM Corp. and Compaq Corp.

Call for all Six-Pack replacement batteries.

CIRCLE 269 ON READER SERVICE CARD

■ DECISION SUPPORT

The Confidence Factor

The Confidence Factor, from Simple Software, claims to offer seven different decision-making methods, but three of the menu options lead to the same decision

In the \$389 package, Simple Software provides as much documentation on all of The Confidence Factor's strategies (matrices, decision trees, Monte Carlo analysis, linear programming, critical path scheduling) as other DSS vendors provide on one. It seemed a bit sketchy, but representatives at Simple software claim the company has a loval group of Confidence Factor users who understand the strategies and who would rather not deal with voluminous documentation.

The Confidence Factor's decision matrix is much like the others reviewed, but with fewer menus and prompts. The screen editors in The Confidence Factor are primitive by design: Simple Software chose to make the editors simple to use instead of powerful. Too simple, in fact-it would be easy to add powerful editing features that would not hamper users who wanted to use only the simple ones. Although help screens explain what

you can do at each step, they don't explain how to do it. You have to figure that out on your own but, once you do, The Confidence Factor is easy to use because the interface is so simple.

One of the frustrations of using The Confidence Factor's decision matrix mod-





Simple Software Inc. 2 Pinewood Irvine, CA 92714-3274 (714) 857-9179 List Price: \$389; mult user version available. Requires: 128K RAM:

one single-sided single-density disk drive: DOS 1.1 or later In Short: Offers five different decision-mak ing styles. Worth buying only if you want to use several of its decision-making program

Not copy protected.

1-800-241-0286 OVER 3 MILLION DOLLARS IN INVENTORY AND THOUSANDS OF DIFFERENT PRODUCTS IN STOCK, CALL FOR OUR FREE CATALOG.



· Hundreds of portables and laptops-

. DATAVUE SPECIAL-two drives with

. TOSHIBA 3100/1100 PLUS with super-

IBM PS/2 MODEL 30/50/80, new low

twist screen and new 1200

Call for the model that suits your needs.

..... In stock and ready to ship

pricing from \$1499 CALL

ARC/XT—640K, 1 floppy w/20 MB, com-

plete with new Mitsubishi color monitor

 AST PREMIUM 286 MODEL 80 . \$1595 ...mix and match your favorite monitor

..... From \$1299 while they last

SYSTEMS

PRINTERS/ **PLOTTERS**

- . BROTHER HR-40 built in cut
- BROTHER M1409/M1509. M1709-9 pin dot 180-240 CPS ta processing mode. Fro
- CALL AST/QUADRAM laser printers
- from \$299 CALCOMP and HEWLETT PACKARD PLOTTERS . . . cr
- for complete CAD syst HOUSTON INSTRUMENTS DMP-52 MP (14 pen/22 IPS
- 21.5" x 34" plot) \$4175 • OKI LASER PRINTER . . \$1895 Delivered, complete!





MONITORS

- MITSUBISHI 1410 EGA 640x350 resolution \$429
- NEC MULTISYNC XL and PLUSnow available!
- . PGS LM 300-a true WYSIWYG monitorCALL!
- MITSUBISHI 1409 color monitor
-\$349 SAMSUNG TRUE MONOCHROME
- AMDEK 410A/W/G\$179 PGS MAX-15 NEWI
- . New line of monitors in stock, call for our unadvertised special.

SOFTWARE BORLAND EUREKA BORLAND REFLEX

RKIV

AUTHORIZED DEALER

and card (shipping included)



* SILA
BOARDS
 INTEL INBOARD 386—turn your AT into
a 386
 QUADRAM HPG—high resolution video
MATAR MODEM IN S
 QUADRAM EGA PROSYNC—with free Opti
Mouse
INTEL—above board/NT w/512X RAM



DRIVES . MICROPOLIS 40 MEG hard disc

TE (57-4051) 40 MEG voice col SEAGATE git 225) 20 MEG hard disk MICC

COMPAG CALL FOR OUR FREE CATALOG!

Compag products available in retail stores only VISIT OUR SHOWROOMS IN ATLANTA. CHARLOTTE, DURHAM, & RALEIGH CIRCLE 4% ON READER SERVICE C

INFORMATION

1-404-634-5995



CMO. Doing business-to-b

MONITORS.	DRIVES.	SOFTWARE.
Amdek	CMS	DAC Software
Video 310A 12" Amber TTL\$119.00	Plus 21 Internal Card\$339.00	Easy Accounting\$49.99
	T-160 60MB Tape-Backup649.00	Sth Generation
	Everex	Fastback 89.99
	Stream 60 Teac Tape-Backup589.00	Imel
	Stream 60 PS-2 Back-upcall	Optimouse w/Dr. Halo89,99
	lomega	Logitech
	A110H 10 + 10 Bernoulli Box.1549.00	C7 Mouse w/Software89.99
	A220H 20 + 20 Bernoulli Box1899.00	Lotus
	Irwin 110D	Lotus 1+2+3329.00
	10MB Tape Backup259.00	Symphony439.00
Amdek Video 410G \$129	120D 20 MB Tape Backup399.00	MECA
\$120	425AT 20 MB Ext. Tape369.00	Managing Your Money119.00
12" Green TTL \$129	Mountain	managang real managananan reace
Video 410A 12" Amber149.00	20 MB Drive Card489.00	THE STATE OF THE S
Video 410W 12" White149.00	30 MB Drive Card599.00	
Color 600 RGB, IBM CGA349.00	50 MB Drive Cardcall	7794
Color 722 RGB, CGA/EGA479.00	60 MB Tape Back-up1149.00	
Leading Edge	Dual 20 MB Bernoulli1799.00	10000
12" Green TTL 69.99	5¼" BETA Bernoulli1499.00	
Magnayox	SW DETA Demodificant 1988.00	
515 RGB Monitor 80279.00		The second second
3CM515 RGB Monitor-8029.00	Ru	Micropro Professional 4.0 w/free GL \$239
7BM623 12" TTL Amber99.99		Micropro Professional \$220
3CM873 14" Multimode549.00		4.0 w/free GL +235
Witsubishi	G	Wordstar 2000 + 2.0289.00
KC 1409C349.00		Microrim
NFC		R:Base System 5439.00
1280/1285 12"A or G TTL99.99	-	Micro Soft
1401 Multisync549.00	PC-T00 40 MB	Micro Soft Word 3.1229.00
Polaroid	Tape Backup (XT/AT)\$369	Micro Soft Word 3.1
Pallette EGA Plus2399.00	Tape Backup (XT/AT)*303	Microstuf
Princeton Graphics	Priam	Crosstalk XVI89.99
MAX-12 12" Amber TTL149.00	Priam ID-60AT Tape-Backup899.00	Migent NVI89.99
HX-12 12" Amber 11L149.00	Racore	Ability49.99
-1X-12E 12" RGB/EGA479.00	Jr. Expansion Chassis w/DMA299.00	Multimate International
SR-12P 12" RGB Pro GRP579.00	Seagate	Multimate 3.3249.00
Taxan	ST-225 20MB w/Controller339.00	Multimate Advantage II (Premium),309,00
Model 720 14" RGB Color299.00	Sysgen	Advantage Keyboard269.00
WOODE 720 14 HGB COIDI299.00	Smart Image 20 MB569.00	Norton Software
DIGICETTES		Norton Utilities 4.059.99
DISKETTES.	SOFTWARE.	Software Publishing Group
Maxell	Aldus	PFS:First Choice (Premium)99.99
MD2-DM DS/DD 5¼"9.99	Pagemaker489.00	PFS:Professional Write (Premium), 119.00
MD2-HDM Hi Density 51/4"19.99	Ansa	PFS:Professional File (Premium)149.00
MFD2-DDM DS/DD 3½"18.99	Paradox459.00	Harvard Total Project Mgr. II359.00
MFD2-HD Hi Density 3½"59.99	Ashton Tate	First Publisher
Sonv	D Base III +399.00	Symantec
MD2D DS/DD 5¼*9.99	Borland	Q & A - The Data Base249.00
MD2HD Hi Density 5¼"20.99	Turbo "C"64.99	Word Perfect
MED-100 SS/00 31/4" 12.99	Central Point Software	Word Perfect 4.2 209.00



19.99

5 8 7

NXN11PPPNHHST

MFD-2DD DS/DD 31/2*....

MFD2-2DDHD Hi Density 31/2"...



Copy II PC.

PC Option Board



24.99 Xerox Corp.

COMPUTER MAIL ORDER

usiness, person to person.

.

TI-865 150 CPS, 132 Col.......749.00

P321SL 216 CPS, 24 Pin Head.539.00

P351-II 300 CPS, 24 Pin Head..999.00

ооо, р	0.00	Polociii
PRINTERS.	MULTIFUNCTION CARDS.	MS/DOS SYSTEMS.
Brother	AST	Compaq
M-1409 180 cps, 80 col\$359.00	Six Pak Plus PC/XT\$129.00	DeskPro 286call
M-1509 180 cps, 132 col399.00	Six Pak Premium209.00	DeskPro 386call
HR-40, 40 cps, Daisywriter599.00	Advantage AT Board309.00	Compaq Portablescall
Citizen	Hot Shot 286369.00	IBM
MSP-10 160 CPS, 80 Col299.00	Boca Research	PS/2 Model 30call
MSP-20 200 CPS, 8k Buffer349.00	Top Hat128K expansion99.00	PS/2 Model 50call
Premier 35 35 CPS Daisywheel.499.00	Boca EGA149.00	PS/2 Model 60call
C.Itoh	Boca RAM/AT 1 MB Card269.00	Leading Edge
315 XP Epson/IBM 132 Col449.00	DCA	Model D Desktopscall
	IRMA 2.2 3278 I/O799.00	Panasonic
A. Control of the Con	Everex	Business Partner799.00
4	EV-136 Ram 4000369.00	PC-T00
and the second of the second o	EV-125 Magic Card AT199.00	640K 8 MHz Turbo System559.00
	EV-657B Micro Enhancer Deluxe149.00	512K 10MHz 1.2MB AT-1800999.00
Harris Harris	Fifth Generation	Toshiba
ma	Logical Connection 256K299.00	1100 & 3100 Plus Lap Topscall
	Hercules	WYSE
The state of the s	Color Card159.00	700 CAD/CAM Hi-Res Terminal.749.00
Epson LQ-1000	Graphics Card189.00	MODEMS.
180 cps Free Tractor \$569	Graphics Card Plus199.00	MODEMS.
	InColor Card - more res339.00	
Epson	IDEAssociates	
LX-800 150 CPS, 80 Col179.00	IDE-5251 Emulation Board579.00	*contract faller
FX-86E 240 CPS, 80 Col329.00	Intel	VOLKSMODEM 12
FX-286E 240 CPS, 132 Col459.00	80287 Math Co-processor219.00	DHINESON AND THE PARTY OF THE P
EX-800 300 CPS, 80 Col399.00	1010 PC-Above Board239.00 4120 Above Board/PS 286399.00	MODEM
EX-1000 300 CPS, 132 Col499.00	Inboard 386/ATcall	Management of the Control of the Con
LQ-800 180 CPS, 24 Pin459.00	NEC SOURT	Approximate Approx
LQ-2500 324 CPS, 24 Pin899.00	GB-1 EGA Adapter319.00	
Hewlett Packard ThinkJet379.00	Ouadram	Anchor Volksmodem \$79
NEC NEC	Model 30 Quadboard PS/2319.00	1200 Baud Half Card 7 / 9
P660/760 Pinwriter Seriescall	Quad EGA+279.00	Anchor
P560XL Pinwriter 132 Col999.00	Quad Prosync EGA339.00	Volksmodem 1200 External99.99
3550 35 CPS, Spinwriter779.00	Gada i losylic Lovi	Express-i 1200 Half-Card149.00
Okidata		Lightening 2400 Baud319.00
ML-192 + 200 CPS, 80 Col369.00		Best Products
ML-193+ 200 CPS, 132 Col559.00		Smart 1 1200, Half Card w/Soft99.00
ML-292 200 CPS. 80 Col449.00		Everex
Panasonic	<u> </u>	Evercom 940 2400 Baud Internal 199.00
KX-1080i 120 CPS, 80 Col179.00		Evercom 920 1200 Baud Int109.00
KX-1091i 160 CPS, 80 Col189.00		Haves
KX-1092i 240 CPS, 80 Col329.00		Smartmodern 1200 External319.00
KX-1595 240 CPS, 132 Col459.00	Video-7 EGA Deluxe	Smartmodem 1200B319.00
Star Micronics	Video-7 EGA Deluxe Graphics Adapter \$329	Smartmodem 2400479.00
NX-10 120 CPS, 80 Col179.00		Practical Peripherals
NX-15 120 CPS, 132 Col359.00	Video-7 EGA Video Adapter279.00	Practical Modern 1200 External.159.00
Texas Instruments	Zuckerboard	PC 1200 Package159.00

U.S. Robotics 1200 Baud Internal.....

1200 Baud External.....

2400 Baud Internal...

00 00

109.00

189.00

Call toll-free: 1-800-233-8950.

Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283
CMO. 477 East Third Street, Dept. B109, Williamsport, PA 17701

AUIL. AT Least Limits Street, Legis, Louty, Williamsport, FA 17701.

All MAJOR (REDIT CARDS ACCEPTED.

POLICET Acid Sky (minimus 97.00) phoping and handing, Legis prisyments may require additional objective local form company checks seek to the company and the company of the

SYFI OW

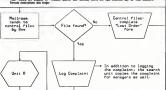
An on-screen flowchart processor that knows about flowcharts - not just another "screen draw" program that makes you do most of the work. EASYFLOW is a powerful full-screen graphics program dedicated to flowcharts and organization charts. With it you can quickly compose charts. More important, you can easily modify charts so they are always up to date.

- > Automatic: Fully automatic text centering within shapes, both horizontally and vertically. Fully automatic line routing & re-routing.
- Fast: Written in assembly language for speed.
- Large: Charts up to 417 columns wide by 225 lines high. Chart too large for your printer? ExsyFLOW automatically breaks the chart up & prints it in page size pieces.
- Standard: All standard flowcharting shapes included. Custom shapes can be ordered. ► User friendly: Don't take our word for it. PC Magazine* says "EASYFLOW lives up to its name. It's hard to imagine any easier and more flexible way to produce
- basic and even complex flowcharts" ➤ Mouse: Optional but fully supported.
- It prints: On most popular matrix printers including IBM, Epson, Toshiba, HP LaserJet, LaserJet-Plus and many others.
- ▶ It plots: On HP7440, 7475, 7550, 7570, 7585B and compatible plotters. > It works: We are contractually prevented from mentioning the name of the "big
- eight" accounting firm that purchased a world-wide site license, but we can tell you that they spent months evaluating all available flowcharting packages before choosing EasyFlow
- Rush delivery: Order by noon today (eastern time) and we'll have it to you by counier tomorrow**. Rush delivery charge is \$15.00 (instead of \$2.00) and is available only in USA & Canada
- Documented: 100 page manual plus over 150 screens of context sensitive help. FastFinw works on IBM PC's, IBM PS/2 and compatibles, Requires 384 K memory. DDS 2.0 or higher and an IBM CGA/EGA/VGA or Hercules monochrome compatible
- Order direct for only \$149.95 + \$2.00 S&H (USA/Canada), \$10.00 (foreign). Payment by M.D., cheque, VISA, Mastercard or Company PO.

March 10, 1997 rises, page 278

and suche on draight by marker Careth and recording over the read business late to read business.

Barrier deplications lake longer



The chart fragment above was produced on an HP LaserJet-Plus and is actual size and unretouched. Publication quality charts like this can be produced using only minutes of preparation time and seconds of print time CIRCLE 201 ON READER SERVICE CARD

HavenTree Software Limited PO Box 1093-P

Order Desk: 1-800-267-0668 Information; (613) 544-6035 ext 49 Thousand Island Park, NY 13692 Telefax(G3); (613) 544-9632

■ DECISION SUPPORT

ule is that it's hard to change the attribute weights. In order to find the right number, you have to scan through all the alternatives, one attribute at a time, until you reach the alternative and attribute whose value you want to change. It's like working with a word processor that doesn't let you jump to a specific page.

The Confidence Factor doesn't make things as easy for the novice as do programs that specialize in one decision strategy. The documentation assumes that you understand all its decision techniques and gives you essentially no explanation of linear programming. Monte Carlo simulation, or critical path project scheduling. However, someone who understands these tools and is not afraid to poke around enough to learn the interface can probably make good use of The Confidence Factor.

At \$389, you have to want The Confidence Factor's other capabilities in order to justify buying it. If all you want is a decision matrix, there are cheaper and friendlier alternatives .- William Taylor

Decision

Decision, a decision matrix program from Once Begun Computations, is very close to a fixed-formula spreadsheet. It displays a matrix of alternatives and attributes. Specify the relative numerical importance of the attributes and the numerical value of each attribute for each choice, and Decision calculates a set of scores. The printed output looks like a spreadsheet.



DOS 2.1 or later In Short: A solid, simple, honest program. The only one reviewed that displays a decision matrix as a matrix. Also the only program that explains the formulas used to rapk decisions. Not copy protected.

You don't have to be an Engineer to use CAD anymore!



We've made Computer Aided Design & Durating so cesty-deuse, affordable, and capable that now it's showing up witcually everywhere, in the office, on the job size, at school and home. Managers are using Generic CADD* to generate reports, forms and flow chart. Tradespeople are using Generic CADD* to make pleas and change plans. Schools are using Generic CADD* to change plans. Schools are using Generic CADD* to change the students.

Professionals of all types now realize that Generic CADD^{**} gives the same kind of power over their drawing that spreadsheet programs gave them with numbers!

Generic CADD;* Just \$99.95 Not copy protected. 60-day money back quarantee.

Productivity Modules: DotPlot** AutoDimensioning** Drafting Enhancements 1** & 2** AutoConvert**

ହ

To order, call toll free: 1-800-228-3601 or 206-885-5307 8763 148th N.E. Redmond, WA 98052

Generic IGES™

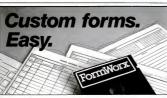
Generic

■ DECISION SUPPORT

Decision also documents the formulas | it uses to calculate scores, which is comforting for people who like to know what's going on. Since Decision displays the entire matrix on the screen, you can pinpoint

a number and change it. All the other products we reviewed force you to examine your model one part at a time. Decision has a two-dimensional display that gives you a bird's-eve view of your decision.

Decision comes in a compact plastic case hardly bigger than the disk, so at \$95 it's not only cheap, it has the smallest footprint. If you need a decision metrix and don't want to enter formulas into a spreadsheet, buy Decision.-William Taylor



"FormWorx makes it easy to create forms. Inexpensive...easy to use." The Wall Street Journal.

Whether it's a form you use thousands of times, or a one-of-a-kind, you can desig it right on your PC with FormWorx*. It's so easy, you'll be making your first form soon after you open the package.

"This program simply does a beautiful lob." PC Week. FormWorx has the features you need for crisp, effective forms. You can draw vertical and horizontal lines (single. double and bold) that print perfectly straight and solid. Use normal, wide, and large type sizes for titles and labels. And your forms can be eny prectical size, up to 11" x 14"

"The user interface is first rate." PC Magazine. Pull-down menus and clear com mands make it easy to add e row, change a column, or move things eround until every detail is just right. There's even an "undo" commend for those times when your com-

puter does what you say, instead of what Lets you fill out forms perfectly. Fill out custom or even pre-printed forms on your PC without accidentally crossing a line.

using text editing features like automatic

Yes.	olease	send me	: FormWior	x for \$95"	

* Add \$4.75 for shipping US/Canada, \$10 for armail overseas, in More add 5th order for ☐ Enclosed is my check or money order (payable to Formillon Corp.) Please charge my | D WSA | D MC | D AMEX

word wrap, on-screen underlining, boldfacing, and justification. Integrated macros let you automate repetitive tasks, type "boiler plate" phrases with a single key-stroke, armo from one blank to enother, end more. And you can print the whole form or just the data on any of over 100 populer printers

"FormWorx is a lot of fun...this so ware should be on your 'must have list." PCM Magazine. See for yourself Order FormWorx and find out why thousands of users (since 1984) have come to rely on this program.

Special offer! For just \$95° you get FormWorx with built in macro features sample forms, and superb manual wit tutonals. Plus free telephone support. Ask your dealer or order directly

1-800-992-0085 (in Mass. 617641-0400)

Ask about our other products, including

dsk,	for	use	with	Forms	Work	on y	our P	C
_	-				-	-	-	-

FormWorx (presy Analys international Inc.) Ulugior, 454 (2974)

Decision Aide II

Decision Aide II. from Kepper-Tregoe. emphasizes the information-gathering phase of a decision. It urges you to describe the problem to be solved, state the objectives of a solution, and list alternatives. The \$250 program also offers a "brainstorming" mode that tries to help you think of other alternatives (a useful feature, since coming up with viable solutions is often the hardest part of making a decision) and makes sure you don't overlook any risk factors.

Decision Aide has two files of phrases that are supposed to help with alternate viewpoints. When you ask it for brainstorming, it may ask, "What would your mother think about choosing a car?" "What would a musician think?" When you are looking for risks. Decision Aide will say "Have you considered all of the safety aspects of this alternative?" or "Have you considered all the legal aspects of this alternative?" Such goads sound corny, but they do work-especially with





(800) 223-0482 (609) 921-2806 List Price: \$250. Discounted if you buy the vendor's project n

ager and problem-solving program at the

Requires: 256K RAM; two disk drives: DOS 2.0 or later.

In Short: A friendly, full-featured program that helps make sure the decision focuses on the right problem. Copy protected: requires key disk in drive A:, which can be bypo with a password that the vendor provides on

CIRCLE 630 ON READER SERVICE CARD

Decision data files created with *Decision*Aide can be read by word processing programs or spreadsheets, making it possible to export data to word processors.

committees of decision makers—because they help you get past preconceived notions about the issue and get a consensus on individual ratings.

Both Decision Aide and Light Year (also reviewed here) treat must and want criteria separately. Being able to record which criteria nuses cost in a masses of the it makes it clear what musts cost in the most important is automatically. The most important is automatically single the massing or the most important is automatically single the massing points to the other wants. Autribute values can be displayed either numerically values can be displayed either numerically charged by the control of the

Decision Aide offers a simple form of sensitivity analysis by plotting all the alternatives against an "ideal" that would achieve the maximum score on all wants. Decision Aide also consume saltematives, sisting messages oilse, "Ww scored 48 provement in the resalt value score of Cadliane would erase the difference." The comparison system can also plet alternatives. This shows whether the best choice is better than other alternities on every airtives. This shows whether the sort contains the contraction of the con-

The program has many features and is easy to use; menus guide you through choices. Decision Aide's help files are pretty good, but a bit of work with the

manual pays dividends. Decision data files created with *Decision Aide* can be read by word processing programs or spreadsheets, making it possible to export data to word processors. But *Decision Aide* doesn't offer as many report formats as some other DSS programs do.

Decision Aide left the screen in a funny color mode so that all my text came up green after I exited. It also made me reload



and Multi-port Background Communications"

SOFTERM PC

- Includes over 40 exact emulations, supporting block and conversational modes
- Seamless Remote Virtual-Disk integrates file transfers between remote systems and your favorite PC application using local disk syntax
- Supports IBM*PS/2 PC, XT, AT, compatibles
- Operates serially or with most LANs, NetBIOS and custom

\$19500

For Information Call 800/225-8590

SEFTRONICS

CIRCLE 235 ON READER SERVICE CARD

DECISION SUPPORT

the system disk before going on to another program. Moreover, *Decision Aide* does an automatic backup whenever you start working. Backup is nice, but it's frustrating to have it happen all the time. This is an extremely friendly, versatile decision matrix program. The \$250 price is higher than that of no-frills programs, but it's worth the extra cost if you like the besingtoning aide. William To-ties



WORLD's First Multifunction Board and PS/2 Family From Zuckerboard

Zuckerboard's NEW Micro Channel line satisfies all your PS/2 add-in board needs'

Neous.

Two of the hottest stars in the Micro Channel
line are the 5040 Multifunction Board and the
Format Converter.

Zuckerboard's 50/60 is the ONLY Multifunction Board on the market. It includes both a serial and parallel port, as well as up to 2Mbytes of memory. The memory is both EMS and extended or a combination of both. The 50/60 Multifunction Board

combination of both. The 50/50 Multifunction Board can expand the Model 60 to 7 Mbytes and the Model 60 to 15 Mbytes. Other standard features include a nerial adapter and software for print specifing. EMS simulation, and diagnostics. The Format Convertor saves you the expense of

The Format Convertor saves you the expense of boring depilicate software by allowing you to transfer data from IBM's old 5.25" format to the new PSU 2.5".

Zuckerboard's Micro Channel PSU2 family has everything you need — with the highest quality and at the highest price/perfromance, all with a five-year warranty.

MICRO CHANNEL LINE SELECTION CHART

				13COS		
NAME	363	20	20	20	20	PRICE
ENG BOARD (viii) 1989/sed	5000	x	Г	Г	Г	\$1000
20 Board (sensit/purelist and second sensit option)	1845	ĸ		Г		Ent
Stormal Motors (1886 bend)	1486	1		Г	_	pas
Habituation Board risk, 63 or 1Mbyton Memory)	1890		×	x	Г	MON Seni
Sturnal Modern (1300 hand)	1696		x	x	x	80%

For more information see your local Zuckerboard dealer or call 1-809-624-4920 (US) or 1-800-658-6209 (CA).

ZUCKERBOARD

ATD/Zackerboard 235 Santa Ana Court Sunnyvale, CA 94666 (408) 720-1942

Decision Modeling

For users of Ashton-Tate's Framework II.
Dection Modeling is \$50.95 for toolcision marrix modeling. It uses Framework's distinctive command style to produce graphic results that can be included in
proprist produced by the Framework word
processors. It's not the most elaborate of
decision modeling programs, but is a
good introduction to the marrix approach
and is fine for many applications. AshtonTate, unfortunately, is no longer profustion and the property of the property of the prolate of the property of the property of the prolate of the property of the property of the prolate of the property
Like other add-ins, Decision Modeling is called from the Framework desktop. It is entirely menu driven and can be easily learned even by users with very little

Framework experience

You build a decision model by first listing your options. With Decision Modeling, you first list the costs and benefits associated with each choice. If all costs closed with each choice. If all costs weight them. The usual way to do this weight them. The usual way to do this cost cost and benefits are not equally important, you weight them. The usual way to do this cost cost and benefit a number be ween 1 and 10, say, or I and 100. If you be the provision Modeling, will then assign an ommalized percentage to each cost magnitude to the total for the whole list is 100 percent.

Once you've assigned weights, you must evaluate each choice according to every cost and benefit. When you do this, Decision Modeling displays a graphics bar with a blinking cursor on it, which you move with the arrow keys: for favorable



20101 Hamilton Ave.
Torrance, CA 90502
(213) 329-8000
List Prices 569.95
Requires: 512K RAM;
two disk drives; Framework II, DOS 2.0 or later.

In Short: A Framework II add-in that uses the decision matrix modeling technique. Not

copy protected.

CHICLE 832 ON READER SERVICE CARD

12 MHz SPEED!

For your PC, XT, AT or compatible.

FastCACHE-286^{to}

The Fastest PC Accelerator

FactCAFE-286 is the fasted in a final card accelerator over both it is also the first to have an on-board 2908 acceler, but high high-speed 9208 acceler, but high high-speed 9208 acceler, but high high-speed 9208 accelerator of the speed 9208 accelerator of 9208 acc

PC	Si 1.0	Sieve MS C (sec) 5.88	Shuttle Regen (sec) 100 (12)*	Price
9 MHz FastCACHE-286	7.1	1.32	28 (7)*	\$399
12 MHz FastCACHE-286	10.3		22 (6)*	\$599

*Times in parentheses are with an 8087 or 80287.



287TurboPLUS adds a new feature to PC Magazine Editor's Choice - 287Turbo. 287Turbo

increases 90097 speed from the 4 MHz, used by JBM to 10 or 12 MHz. It has become an industry standard used in the AT, clones and the 385 Designo, 297 MHz. It has used in the AT, clones and the 385 Designo, 297 MHz. It has used to control the 90095 clocks speed of the AT motherboard. Typics DHz. It has the property to 10 MHz. It has the pro

MICROWAY . . . Respected throughout the industry for high quality engineering, service and technical support. Dealer, WAR, university and corporate inquiries are welcome.



The World Leader in 8087 Support

P.O. Box 79, Kingston, Mass. 02364 USA (617) 746-7341 32 High St. Kingston-Upon-Thames, England, 01-541-5466

SECRET CULT



EXPOSED.

Only a dedicated few knew that it even existed.

But word travelled. And the ARC PC gained a small but ardent circle of admirers.

Small, because ARC has always been more serious about making products than about promoting them. You know how it is with engineering-driven companies.

Quietly, away from the hardware hubbub, a cadre of committed ARC engineers were fashioning fully IBM-



compatible PC's that outperformed everything else on the market. Nobody could match

ARC speed. The ARC Turbo 12 was the first PC to run at 12.5 MHz. Twice as fast as the original PC-AT, it's the only PC with a built-in speedometer.

Not to mention the fact that we invented the first dual-speed PC in the industry. But speed was

only for starters.
ARC also beat the competition in on-board
memory. Expandability (8 slots). Hard
disk storage. More
value per dollar. And
compulsiveness about
details: down to things
like the quality of each

chines is legendary. So, ARC PC's attained cult status among some of the toughest computer jocks in the country.

weld. The solid construction of ARC ma-

Now, the time has come to open things up a little. Why keep a good thing a secret any longer?

longer?
Ask your computer
dealer about the ARC

CIRCLE 327 ON READER SERVICE CARD

family of fully compatible PC's, including our Model 10, Turbo 12, and new 386i.

If your favorite dealer





isn't part of the cult yet, we'll let him join, too! Call us at (213) 265-0835. Or write ARC, 1101 Monterey Pass Road, Monterey Park, CA 91754.

ASC

Decision Modeling displays its results as a graph, so that you can tell at a glance how the options measure up.

ratings you move it to the right; for unfavorable, to the left. You can assign high and low numbers to the extremes of the bar, or word pairs such as fast/slow.

After rating every choice according to all costs and benefits, you can calculate the relative value of each choice. *Decision Modeling* does this with a formula: Score = weight × value

For each weight we fill the control of the control

NO SENSITIVITY ANALYSIS All these graphs are useful, but none expresses

these graphs are useful, but none expresses the results of a real sensitivity analysis. There's no way to ask the program whether ether the recommended choice would be different if one or another criterion were changed only slightly. There is also no way to group costs or benefits. You can give them different weights, but you can't make some subordinate to other.

Another of Decision Modeling's limitations is speed. Different steps in model building require disk access that can last several seconds. Also, even though the artimetic is simple, it takes longer to evaluate choices than you'd expect. Entering the labels for choices or for costs and benefits is surprisingly slow.

The manual is pedantic and ponderous, but it's better to err, as it does, on the side of too many words rather than too few. The program disk comes with several example analyses that are exhaustively explained in a printed tutorial.

All told, Decision Modeling is a simple, honest matrix model that Framework owners can use for relatively straightforward decision making.—Jared Taylor

Expert Choice Expert Choice, from Decision Support

Software, is aimed at making complicated decisions with thousands of alternatives and attributes. More design effort seems to have gone into handling lots of data than into making it user friendly. Expert Choice does not try to help you think up alternatives or risk factors—it assumes you are overwhelmed with so many possibilities that you don't need any more.

Expert Choice tries to make it easy to keep track of monster decision matrices by modeling decisions as trees of attributes. You start at the top of the screen with a goal, display goals in squares called "nodes," and assign nodes under the goal node for attributes. After assigning nodes for each attribute, you list all the alternatives under each attribute.

Don't confuse Expert Choice's tree with decision trees. Its display looks like a





Decision Support Software Inc. 1300 Vincent Pl. McLean, VA 22101 (800) 368-2022 List Price: 3206 P.A.

Requires: 3495
Requires: 320K RAM;
graphics adapter; two disk drives; DOS 2.1 or

In Short: A package designed for making huge decisions like locating nuclear waste dumps, but too complicated to bother using for anything simpler. Copy protected, but can be installed on a hard disk.

OFFICE 827 ON FELORY SERVICE CARD

decision tree, but the tree is a user interface intended to help you make sense of large decision matrices. A tree seems to be a reasonable way to think about decisions—being able to wander off down a branch of a tree and think about an isolated part of the

decision helps solve complicated problems—but you can also get lost. Once the tree is set up, you rank attributes and give values for each alternative. Most decision matrix programs require

butes and give values for each alternative Most decision martis programs require that you enter ratings as numbers. Expert Choice lets you use numbers, or words such as "much more" important. If you don't like the numbers, you can select another word from a menu or change the numbers. Expert Choice requires that you rate the importance of all possible pairs of artiflets against each other. Then it can be a start but as a select another word from a menu or change the artiflets are as a select another. Expert flower rate that importance of all possible pairs of a start but a select another. Then it can be a select another than the select and the

These calculated weights are functionally the same as the weights you specify directly, but Expert Choice claims that you are more likely to arrive at correct weights for all attributes of the decision if you compare them one pair at a time. If that's true, it's probably more effective for decisions with many attributes and alternatives.

One limitation of the tree structure is that each node can have only seven nodes under it. When choosing a car, you can have only seven attributes bearing on the decision. Decisions with more than seven attributes must be expressed as subattributes. This is limiting, but it lets you handle more-complicated decisions.

Expert Choice has the most comprehensive sensitivity analysis package of any of the matrix programs we reviewed. It plots the sensitivity of the decision to any attribute by drawing lines for all other attributes. The slope of each line shows how much a change in the attribute would affect the rating of the alternative. This is more than anyone needs for decisions that involve only a few choices and attributes, but it's helpful for larger problems.

HARD-TO-CHOP TREE Given that Expert Choice was designed for large decisions, it should be easy to edit a large tree. It wasn't. Expert Choice has powerful features for copying, replicating, and modifying nodes, but powerful tools can slice your fingers off if you aren't careful.



The Most Powerful LAN Fits on a Disk.

Network Power. You knew that someday there would be sembour Power. But in the malastine day piece would be be be the malastine of the malast

Its name is LANLink Its name is LANLINK"
A Software-Driven LAN Powerful Enough To Use RS-232
Ports for Network Communications. In development for
over three years, LANLINK" represents the next generation of
local area networks. All of the logic which has straditionally
resided on network boards is on LANLINK's Safelille and

No additional hardware is required. Inexpensive serial ports replace "Kilabuck" Network Interface Boards making installation costs one-third that of a board-driven network.

How To Configure a Smart Network...With Dumb Terminals, But Without Dedicated Servers. Boosling a wide variety of configurations, LANLink™ is most aften set up wide Variety of confligurations, LANLIAR - is most orden ser up, as a "Star" having up to eight schaellers enanceted to a central, nondedicated server. Larger networks can have multiple servers, supporting a total of 73 or more network users. R-LAP (Remote-LAN) gives users the ability in larger than LAP (IRP metwork in real time via a modern. Plus if MultiLink Advanced™ is run on a Satellite, inexpensive dumb terminals can be used to access network disks, files,

and programs.

uBLink is a registered trademark of The Schware Link NRLINK¹⁰ Mustiliank Advanced ¹⁰ & BriLANI¹⁰ are trademarks of TR AR PC & PC-DOS are trademarks of BMC Corp VerdStat 2000, IASSE II, and Librus 1-2-3 are trademarks of MicroPro, Ashtonins, and Librus 1-2-3 are trademarks of MicroPro, Ashtonins, and Librus 1-2-3 are trademarks of MicroPro. CIRCLE 393 ON READER SERVICE CARD

99% of PC-DOS Applications Run in a Totally-Transparent Network Environment, if you know DOS, you already know how to use LANLING** COPY transfers tiles among users, and a 2-drive PC Satellite Doots 1-2-3 from the Server's hard disk with the entry c:lotus. Each satellite's access can be limited to specific disks, printers, and su directories. A wide variety of software including Lotus 1-2-3, dBASE III, and WordStar 2000 is tully compatible. LANLink™ sion-free data transfer rate which exceeds 115 000 RPS

Power Up Your PCs Today. For complete details and the authorized dealer nearest you, call The Software Link TODAY. The LANLInk™ Starter Kit is \$495 and includes modules for both a Server and a Satellite. For a limited time, 50 leet of shleided RS-232 cable will be included free of charge. Additional Satellife Modules are only \$99, each.

LANLInk™ is immediately available and comes with a maney-back guarantee. VISA, MC, AMEX accepted.



Developers of LANLink*wand MultiLink* Advanced

3577 Parkway Lane, Atlanta, Georgia 30092 Telex 4996147 SWLINK FAX 404/263-6474

(For the dealer nearest you) CALL: 800/451-LINK In Georgia: 404/448-LINK OEM/int'l Sales: 404/263-1006 Resellers/VARs: 404/448-5465

Dealer Inquiries Invited

When I tried to cut out a node and paste it back in, I destroyed the model. Only after I talked to a company spokesman did I understand why that happened: there's no way to back out of an ill-advised paste.

Expert Choice's tree editor could be more powerful, but editing trees is harder than editing text, and there's less accumulated wisdom about the best way to do it. Expert Choice is designed for big deci-

sions, so, no matter how small your decision, the program stores it on disk because it assumes it won't fit into RAM. That makes moving from node to node very slow-almost anything you do requires a disk access. It would have been more work to design a system that used a disk only when it ran out of RAM, but that would have made the product a lot faster.

Unless you're asked to bring about world peace or pick a site for a nuclear waste dump, you probably wouldn't use Expert Choice's capacity often enough to justify the time spent learning it or the \$495 price. But if you are in a position to make those decisions, you might like Expert Choice.-William Taylor

Light Year

Light Year, from Thoughtware, is a slickly packaged \$99 decision matrix program that lets you write rules to control how alternatives are ranked. Light Year is just another decision matrix, albeit a very glitzy one. Its rules can override the normal ranking process, so you can generate completely bogus rankings if you want to.

Light Year supports must criteria by letting you write rules about attributes. For example, going back to our car purchase model, you can say that Price must be less than \$10,000. Light Year is a bit more flexible than other products because a must rule can be either an elimination rule or a weighted rule. If it's an elimination rule, Light Year rules out cars that cost more than \$10,000. If it's a weighted rule, it can





1700 NW 65th Ave. Plantation, FL 33313 (800) 848-9273 (305) 584-6386 List Price: \$99 Requires: 192K RAM:

In Short: The flashiest program reviewed-

and the only one that lets the user make the rules for calculating decision scores. Copy protected DIRCLE 629 ON READER SERVICE



۰ 'ampatibility 6 Features ۰ Communications Integrated Text ۰ ۰ ۰ Auto-Leam Mode ۰ Site Licensing 60-Day Monty

LEGEND:

with on expensive voyage on the "New Flagship" and no guarantee of Free Passage if you don't like the trip. To order call Tall Free: 1-800 634-8670 (In Florida call: (904) 878-8564) \$69.95 WALKE COO Shipping/Hondling \$5.00

Crosstalk XVI campatibility,

FREE! Why sacrifice

OD odd \$3,00 Overseas Orders \$18.00 MIRROR IT.

\$20.00 Discount Exclusively For Owners of Crosstalk XVI

County W and County by County
laza Dr lea: 6714280 KLON

CIRCLE 523 ON READER SERVICE CARD

DECISION SUPPORT

award bonus points to an alternative that meets the condition in the rule. If the Price rule said Weight = 40, then cars costing less than \$10,000 would be awarded 40 bonus points in addition to their score based on other attributes.

Rules can be conditioned on the value of attributes. Light Year allows rules such as "If initial cost Greater than \$10,000 then impresses boss should be greater than 5 weight = 40. "This rule says that if a car costs more than \$10,000, then give the vehicle 40 bonus points if the value of the

"impresses boss" attribute is greater than 5. The rule could also say, "If initial cost greater than 10,000 then impresses boss must be greater than 5 elimination rule." Now the rule eliminates alternatives that cost more than \$10,000 unless the value of the "impresses boss" attribute is greater than \$

Rules let you program your own weighting strategy, eliminating alternatives or assigning bonus points according to any criteria you specify. You can make up your own decision-making strategy just as you write your own formulas with a spreadsheet.

LIGHTWEIGHT HELP Light Year's documentation is not well organized. An explanation of how to start analyzing a decision doesn't appear until page 40.1 help files make gorgeous use of color, but if you ask for help with a menu, Light Year puts up a display that looks like a menu but doesn't work like one. I got lost going between menus and help screens.

Attribute weights may be entered either numerically, graphically, or verbally, but once you choose how an attribute is to be specified, you are stuck with that choice. When I changed an attribute from graphic to numeric, it threw away my data and set all the weights back to zero!

Light Year makes poor use of the screen. When entering or examining attribute weights, it displays a column of attributes that takes up about one-third of the screen. It looks pretty, but it makes you scroll more than necessary.

The examples that are supplied with the program won't work because they don't have all the numbers filled in. Filling them in is supposed to be educational, but most of us have better things to do than finishing

someone else's model.

One good Light Year feature is its ability to compare two decision models or two versions of the same model. Light Year generates bar graphs showing how each al-

temative scored in the two different models. It can also direct printed reports to disk files as well as to a printer. Light Year's editor is a bit more convenient than The Confidence Factor's because you can go

TO KEEP YOUR DATA, SAFE: THE BACKUP POWER LINE THAT NEVER BLINKS, BROWNS OR BLACKS OUT.

It is said that knowledge is power But when the power blinks, browns or blocks aut—what do you know? Without SAFE backup power, you'll

Blonk screen. RAM data lost. Lost files. Maybe far worse. You might lose a day's work. Or a critical proposal, on hour before presentation. Or all of the data on your hard disk if it crashes beyond repair

That's what hoppens when your pawer "blinks" even for just a few milliseconds, for shorter than the blink of an eye.

If you depend on your PC's ar mini's ta make your business run, you shauld insure your dato ond hardware with SAFE's backup power line. A full line of power protection systems for every PC and minicom puter application.

SAFE's intelligent, battery power systems monitor interruptions or respond before you have proble giving you ample warning and up 20 minutes to power down, if need and SAFE power systems and

20 minutes to power down, if needed And, SAFE power systems oct or line filters to protect against spike and surges. They're olways charged up and ready—just like o backup power line.

power line.
The cast? Storting at \$395 for a PC user Far mini's, under \$800.
For more information or your nearest dealer, call (800) 325-5848.



CIRCLE 739 ON READER SERVICE CARD

Power protection (or high-level microcomputers with pendiparials mild tabling yetems, and communication networks is here, now, with the 400 wat busishers. Please between the deskipp computer and system monitor, the DataSwer 400 features a master power switch directing lour power cutlest. 2-stages of over-ottage transient suppression and building the computer of the computer of the to assure clean, uninterrupted power. 90 and 200 Watt models available.







805/541-4160 TLX:4949381 CUEST/ Dealer, VAR, & OEM inquiries invited

CIRCLE 391 ON READER SERVICE CARD



WRITE CRAME

6889 Peachtree Ind

Norcross Georgia

STETEMS

404-294-3119

Seine 251

Bouleand

30092

Laptop & IBM PS/2 Users:

The solution to bridge the gap between your \$1, 6.3 \$\frac{1}{2}\$ inch drives. It's a steal. It allows you to use your favorite DOS shell for selective file transfer and it even lets you use your PC's peripherals from your laptop. ... in short. An exceptionally fast and functional transfer utility ... The Brooklyn Bridge is the perfect solution for people who use a laptop almost exclusively as a portable machine that travels from PCto PC. It's terrific!" — Howard Marks, PC Magzzine, UNY 1937.

Rated as one of the best of the best utilities by John Dvorak.

"This is one of those rare programs that you enjoy the minute
you take it out of the box, especially when you discover that
a cable is included... Excellent product."—PC Magazine,
June 23, 1987."

End users are "sold on Brooklyn Bridge...
Dvorak is certainly correct in describing White Crane Systems'
Brooklyn Bridge as 'Fabulous'... and I love it." -G. Schochet,
Letter to the Editor, PC Magazine, May 12, 1987*

PS/2 users: The Brooklyn Bridge allows data transfer and drive access in either direction so you may also transfer your data back to your 51% inch PC.

Priced at \$129.95, call White Crane Systems to order or for more information

"Repeated from PC Magazine, copyright 1987 24f Communications Company



■ DECISION SUPPORT

directly to an attribute value for an alternative, but it's not as convenient as Decision's or Decision Aide's.

Light Year would be just the thing to show someone inexpensively. The colorful mems could lend just the right touch of computerized infallibility to show through a shaky decision. If you were the only one in your group who understood how to write rules, you could bias the decision to four your own point of view. The rulemaking capability lets you personalize each make it grap to write rules that generate answers that are hard to understand—William Taylor

Predict!

Predict!, from Unison Technology, does Monte Carlo analyses in an interesting but clumsy way. It is useful but expensive (\$795), slow, and poorly designed.

People play "whatif" because the frue is uncertain, how much money do you make if you sell 1,000 units a month? Whatif you sell 2,000 a month? You don't know how many units you can sell, as you mumber of units as odd isn't the only uncertainty of the sell of the self of the control of the self of the control of the self of the control of the self of th

With a spreadsheet, you can what-if these numbers one at a time, but there's no





Unison Technology Inc. 410 Rouser Rd., Bldg. I Ceraopolis, PA 15108 (412) 773-3428 List Price; 5795 Requires: 512K RAM; two disk drives: DOS 2.1

or later. Graphics card recommended. In Short: A specialized spreadsheet that does Monte Carlo analysis but is slow on a standard PC. Buggy macro language and sketchy documentation. Copy protected. CIRCLE 688 ON PEADER SERVICE CAPD.

CIRCLE 309 ON READER SERVICE CARD

We set the Mail-Order Standard. Service...Value...Quality.

"If you're an experienced computer user on a tigh budget, the QIC 1800 is by far the best value... considering the system's bargain-basement price. I was more than a little surprised to find the operation manaual to be by far the best of the group." Stan Miastkowski BYTE, March 1987

	10 MHz	8 MHz
EGA System	\$1755	\$1685
Basic system with option,		

- \$1320 Basic system with option Monographic board and m
- Basic system with option color board and monitor

Monitor not included.



with option \$1026 with option \$1126 \$756 \$799

Basic System: 512K expandable to 1.MB, two 8-bit and six 16-bit slots, clock/calender with battery backup, 192 watt power supply, AT" style keyboard, complete 200 page manual.

Member of the Retter Rusiners Russon

Seagate ST4038 30MB (40ms) \$589 Sengate ST251 40MB (1/2 Ht, 40ms) \$625 EC D5146H 40MH (1/7 Hr. 40ms) . . \$49 Seagate ST4096 80MB (28ms) \$1095



* Everex Evercom 300/1200 CALL

- 1/2size, Hayes/Bell 103/212compatible, Bitcom software, made in USA
- Everex Evercom 1200/2400 \$199
 Same feature as above plus CCITT V.22 compatible.
- V.22 compatible, LED status indicator • External 1200/2400



(turbo board) . Turns your PC/XT into 8 MHz AT, compatible with IBM PC and XT, 7 times faster th PC/XT, 33% faster than 6 MHz AT, 16 bit 8028



Quality HD Kit comes with controller, cable, manual, software and mounting screws. scagate ST238 (L/2 Ht., 65ms) \$399 Miniscribe SCXT30 Hard Card (65ms) \$499



monochrome mode, 640 x 200 16 color RGB mode. Hercules 132 column.

720 x 348, Hercules compatible, printer port • QIC Monographic with 132 column \$109

 Professional Graphic Adapter \$995 640 x 200, 2 colors CGA mode, mono Hercules mode 720 x 348, PGA mode 640 x 480, 256



.....\$649



Holds up to 2MB, parallel, serial and game port, set-up software XT EMS Multifunction \$159



Back-up 20MB in less than 5 minutes, Image/Fileby-file back-up and restore, window driven software, made in USA.

MB Cartridge 20MB Cassette Open Saturday 10:00 AM to 3:00PM



7 slots, no wait state design, 135 W power supply. m for 4 1/2 beight drives. Sesgone, Hercules, Hoyes, Bell and IBM are register trademarks

\$429

* Attractive Dealer and Quantity discounts available.

* Corporate and Universities P.O.'s welcome. * Special discounts for Students and Professors (ID rh Support (408) 945-0651 FAX No. 408-263-1447

CIRCLE 122 ON READER SERVICE CARD

SOLIS MODELING ON A PC

ModelMATE is a true solid modeling software package with the power of the "big guys" at a frac tion of the cost. By providing a low cost, high quality package, we plan to make 3D models

available to all serious users - not just a privileged few If you are an engineer, designar, draftsman, architect, or just interested in 3D, ModelMATE is for you. It has the power you need, at a price you can afford. ModelMATE's powerful solid modeling technique (B-rep) places it a class above point-line ireframe) CAD software. This capability is further anhanced by the following features . .



30 Curson Extrusions Construction Planes Surfaces of Revolution Multiple Display Windows Automatic Sectionia Object Duplication & Scaling Interference Checking 6 Standard Views & Isometric

Created and Rendered Using MadelNIATE

An optional print package is available for \$49. A package for transferring NodelNATE models to DXF, IGES, and other popular CAD files is also available for \$49.

stem Requirements: IBM PC/XT/AT, 512K RAM, & one floppy Graphics Card: Hercules, CGA, EGA, PGC, and others commended: Math commencer 640K RAM, mouse or distinct

> Control Automation, Inc. P. O. Box 160100, Altamonte Springs, FL 32716-0100 For immediate information, call (305) 682-7077

> > CIRCLE 257 ON READER SERVICE CARD

CALL TOLL-FREE TODAY 1-800-547-5444

Work better with your computer! Catalog of over 2.700 support products shows how.

Timesavers, spacesavers, money savers, sanity savers! Find them all each month in the Inmac catalog. See flexible disks to furniture, print

spoolers to plotter supplies, cables to cleaning kits—over 200 pages of quality products! And each is photographed and explained so clearly, even beginners learn how to buy wisely.

You get timesaving hints, technical help by phone, same-day shipment, free trials, 1-year-to-lifetime guarantees, and Inmac's 10 years of experience.



Inmac, 2465 Augustine Drive, Santa Clara, CA 95054



	g/Apt.#
Zip	State
	State R SERVICE CARD

■ DECISION SUPPORT

redict! lets you specify the limits or probability distribution of any variable vou're not certain of.

way to incorporate all these uncertainties into your calculations at the same time. The usual what-if sequence in 1-2-3 or SuperCalc is essentially hit or miss. You can build a worst-case model and a best-case model, but what are the odds on either one?

Predict! can tell you.

Predict! lets you specify the limits or probability distribution of any variable you're not certain of. It can handle many different probabilities and distributions: exponential, binomial, Poisson, geometric, normal, hypergeometric, triangular, uniform-even special distributions you design yourself.

Once you have built all these uncertainties into a model, the Predict! user manual suggests that you tell the program to recalculate the variable something like a thousand times. A thousand times?! Every time Predict! calculates you get different results, because Predict! adjusts all the uncertain variables according to the distributions you specified. With an average-sized model, 1,000 different calcs should give you virtually all possible combinations of all the values your uncertain variables could take. Each variable is independent of the others (unless you specify otherwise), so you get a realistic mix of scenarios.

When the cales are done, you have 1,000 different results, stored in tables attached to each variable. You can look at this raw data directly or ask Predict! to display more-useful single values in standard spreadsheet format. You can display mean, mode, or median figures for the

QUBIE' Eliminates the Computer Decision Headache



The best remedy in terms of

Features, Price and Performance is...



QUBIE' V20t!!!

Features

4.77/8 MHz Switchable Clock 135 Watt Power Supply 640K Ram On Motherboard NEC V20 Processor

Multi I/O Card
360K Floppy Drive
'AT' Style Keyboard

1 Year Warranty

take one of these and call
us in the morning

Options Displays

Monochrome Kit (MONOKIT)

Amber Monitor with

Mono Graphic Card Tilt end Swivel Base \$149

RGB Color Monitor 14" Screen 640 x 200 Resolution

Color Kit (CGAKIT)

640 x 200 Resolution Tilt and Swivel Base with Color Graphic Adapter \$399

Enhanced Graphics Kit (EGAKiT)

EGA Hi-Resolution Monitor 14" Screen
640 x 350 Resolution

Fully IBM Enhanced Graphics
Adapter Compatible
Tilt and Swivel Base
Fully Compatible 256K EGA
Card with a Parallel Port

\$579

"Call Now For

"Call Now For More Selections"

Drives/Tape Backup 20MB Hard Disk Kit (PC20) 3 1/2 Plated Media Drive

3 1/2 Plated Media Drive Boots Directly From Drive IBM Compatible 5 1/4" Short Slot Controller Card with Cables

Low Power Consumption \$29
42MB Hard Disk Kit (PC42HH)

\$299

AT Speed in a XT 42MB Formatted 5 1/4" Short Slot Controller Card with Cables

Standard Half Height Automatic Head Parking Low Power Consumption \$519

40MB Streaming Tape Drive
40MB of Formatted Data Per Cartridge
Data Transfer Rate of 1.875MB/Minute
Standard 3 1/2 Floppy Disk Drive Mountin;
Uses Standard DC-20000 Tape
Cartridge
Low Power Consumption
\$349

CIRCLE 236 ON READER SERVICE CARD

The Qubie' Promise 30 Day No Risk Guarantee

If you are not completely satisfied with your purchase, you may return it within 30 days for a full returnd, including the cost to she it back. (UPS ground shipments only)

One Year Warranty
All Oxion' products carry a full

All Color products carry a full one year warranty on all pains and labor. 48 hour humanound on all warranty request. Elemented warranty (PCP) areashed on all products.

For Instead delivery, send cachiers check, money order, or once by Massecranty has Personal checked allow 14 days to other Corporations and instantions purchase orders accepted, call for productionation Cultivaria residents, and 5% sales that

QUBIE'

Outside California (800) 821-4479

Inside Californie (805) 987-9741 Technical Support





(805) 482-9829

Hours: M · F 8am · 5om PTZ Sat 8am · 11am

Canon introduces MORE.

More easy-to-use features. More advanced technology. More productivity.



€1987 Canon U.S.A., Inc.

ARING SOLUTIONS



• 2, 3, 5, or 9 ports · Any post to may post • Up to 1 magalyte · Setal accorded or both

not switch consects several computers to seve such as arteters, moderns, or heat computers. A code the unit selects the dectination. All ports can communicate other part concurrently. Features include confloration form feed, Initialization strings, printity, status, cancel out disable, front panel display, and many mor

This is winter during at its best. All compares can send do simultaneously. The date is released to the exister in the order it was marked. Auto form fined and setup strings keep printer jobs several For the first sensives on decrees not Duration

It fully outsmotic. No dranges to your software are required. • 4 or 2 comput to one printer . Up to 256K memory · Serial or parallel

• From \$395



Additional Interface Products · Printer Juffers

• One year warrants

• full technical suspert

• 30 der money bods opposite



6 or 8 periphersis . Up to 256% memory · Serial or perulisi

• One computer to

• From \$295

P.O. BOX 742571 HOUSTON, TX 77274 • DEW and autom configuration **CALL FOR CATALOG** 713 933 7673

· Nasuri switcher

· Protocol converters

a fable and adapt

• Moderns / line driver

• Autolous

■ DECISION SUPPORT

1,000-calc results, or you can choose a percentile. If you were looking at rate of return on investment, this figure could be the rate that you had a 90 percent chance, say, of eciting or exceeding. If the distributions in your model were accurate, this figure would also be accurate. Even better. you can take any distribution of results in the whole spreadsheet and graph it on screen or on paper for an instant picture of probable results that is far more convincing than a few spreadsheet printouts.

Predict! comes with a super-slick set of manuals that even smell glossy, a lengthy explanation of statistical methods, a macro programming language, and many other statistical and graphics features.

I'M THINKING, I'M THINKING So what's wrong with this lovely program? A lot. The program has to think before it does anything. On a regular PC, it takes more than I second just to move to the next screen of a spreadsheet. Calculation time is excruciatingly slow. The manual sug-

gests you fix a cup of coffee while Predict! goes through its 1,000 calcs. I suggest you read War and Peace. Or buy a speedy 12-MHz AT. Although the spreadsheet has many powerful features, its user interface is clumsy and wholly original, so you can

forget everything you ever knew about spreadsheets. Its command menus have a maddening habit of popping down over the worksheet just when you need to know a cell address. You choose from some menus, 1-2-3-style, by hitting the first letter of the choice, but you choose from other menus by hitting the number of the choice. Sometimes you need to hit Return, sometimes not. These inconsistencies are inexcusable. Finally, Predict! shows only 15 lines of spreadsheet on the screen while other programs let you see 20.

Predict! uses memory so inefficiently that even completely blank cells take up

RAM. Therefore, when you begin a model, Predict! starts you out with only 35 rows and 10 columns. If you need more, you have to add them as you go along. The macro language is theoretically al-

most as sophisticated as 1-2-3's, but it's about as slow as a tired snail and loaded with bugs. Its macros can put you into unexpected and endless loops.



endless loons.

Predict! drives very few printers but insists on writing device-driver commands right into your CONFIG.SYS file. But the manual barely mentions that. The drivers get loaded into memory every time you boot up, whether you use the program or not. Predict! messes with your CON-FIG.SYS file, stuffs junk into RAM, and leaves it there.

Predict! does some admirable things, but it won't be a good buy until Unison Technology makes it fast, bug-free, and easy to use .- Jared Taylor

Prism

Prism, from Tempus Development Corp., is a fast, powerful, graphics-oriented Monte Carlo simulation system. It's expensive (\$895), but using it to avoid one ill-advised product launch or dry well would pay for the product many times over

Prism builds models in compiled BA-SIC, so it runs its trials much faster than do simulation programs that interpret spreadsheet formulas. You can also tell Prism that the probability distributions from which input values are drawn must change with time. This helps simulate time periods, such as days, months, or years, without special programming.

Monte Carlo simulations generate val-



Adinatos VA 22207 (703) 522-3780 (telephone support free for 3 months, then on a negotiated-fee basis)

List Price: \$895; site licer ses available. Requires: 512K RAM; IBM Color/Graphics ter; DOS 2.0 or later

In Short: A very powerful Monte Carlo sim-ulation program. Users will need Tempus Development's support despite good docu mentation and reasonably adequate help files.

Not copy protected. CIRCLE 601 ON READER SERVICE CARD

Canon introduces LESS.

Less hassle Less maintenance.

Less bulk on your desk. Best of all, less cost.



in, call 1-800-453-3307. In Utah, 1-800-662-2500.

Printouts that stand out.

CIRCLE 351 ON READER SERVICE CARD

One Computer & Two Printers?

p Plugging of Orr.

les to SHARE TWO PRINTERS with ONE PARALI
a flick of a switch! To Install plug your existing prin
a flick of a switch! To Install plug your existing prin
a flick of a switch! the back of the switch and connect the switch cables to ler. Two 3½ printer cables are included with the switch Dealers Welcome



LASER BEAM PRINT

Share PC's &

nal (for Office) and Personal (for Home) Switches your PC's & Printers! Share 1 printer among vice versa) with a flick of a switch. Quali

Our Personal Switches Feature.. SILVER PLATED Connections, Budget Prices

Wa Hava Cables Tool Starting at \$12.95

asu To Order Write or Call Tipz Direct, Inc. Specify Model hod (Visa, M/C, Money Order, or P.O.), Name, Ad and Day Phone, If you have Ouestions, Please Call Us (Barn-Som PST)

CALL 1-800-FOR-TIPZ (800) 367-8479. In Ca 415/567-4067) 30 Day Money Back Guarantee Call for our FREE CATALOG AD:PCM-125 © 1987 Tipz Direct, Inc. P.O. Box 690, San Francisco, CA 94101

CIRCLE 116 ON READER SERVICE CARD

Zero. Learning Curve

SPF/PC[™]

Migrating to the PC is a joy when you're using an editor you already know. SPF/PC is the only PC editor with enough mainframe muscle for serious work on big files. And, the transition is easy with SPF/PC's mainframe edit commands, virtual addressing, utilities, network compatibility and much more.

Want more information? Call or write for a free demonstration diskette. SPF/PC, so much like the mainframe, you'll forget you're working on a PC.



1900 Nioummin Bivd., Oadrind, Ca 90011 (415) 309-3530 Telex: 509330

CIRCLE 188 ON READER SERVICE CARD

Financial Planning for the Professional

and completely with programs from STEPHEN ARCHEM.

Now there are six FINANCIAL PLANNING MODELS (FPM'S) that combine the plans of East

- NOW OVER JIT SIX PROMISEL PLANNING MICHELS (PPM 5) that commine the plans of Ex utive, Marketing and Financial Management into Financial Plans
- STRATEGIC FPM—To strategically plan Earnings, Cach Flow and Profitability for up to 8 years.
 ANNUAL FPM—To plan annually for 5 years.
- O GUARTESCHAMIQUE, IPPA To plan for 4 years. The first two years by quarter and the list two years annually
 O MONTHLY FPM—To plan monthly budgets and forecasts.

 PRODUCTION PLANMING MODEL to plan delay production by month given marketin.
- □ PRODUCTION PLANNING MODEL —To plan daily production by month given manietin and manufacturing assumptions
 □ YENTURE ANALYSIS FPM—To plan acquisition or major capital expenditure over
- ru years. ese six easy to use programs operate with LOTUS 1-2-3 ° and SAVE YOU TIME!

To place wedne STEPER ACCES SS forecar purms groups and distant and a 700 place page mutual and Colleges of each mobile! Included a ray check to 2000 place 30 partings and handlings.

____Nr. pleas sent no additional internation. Check programs(s) of interest.

StephenArcher (
Financial Planning for the Professional

STEPHEN ARCHER ASSOCIATIS. INC. For more information ...d. 21 Creation 11 George (203) 968-1156

CIRCLE 380 ON READER SERVICE CARD

DECISION SUPPORT

Prism is expensive, but using it to avoid one ill-advised product launch or dry well would pay for the product many times over.

ues for input variables, then compute output variables. Prism has a menu in which you list all the input variables and tell Prism how to choose their values, and it has a screen for editing equations. The equations tell Prism how to compute output variables from input variables.

Suppose you want to investigate the Profit After Tax from a new product. You first use the menu for defining variables to tell *Prism* what kind of distribution to use in generating input values for Sales Revenue and Production Cost.

Once the input variables are defined, you can enter equations, such as Profit = Sales Revenue — Production Cost and Profit After Tax = 6 * Profit. You type these equations on the equations corner as if you were writing a program in BASIC. When you hit a function key to run the simple experiment of the profit of the program of the program of the profit of the profi

Compiling the equations lets you use the full power of BASIC to describe relationships between variables. Some people say that BASIC isn't a very expressive programming language, but it's far more powerful than spreadsheet formulas.

Suppose that past experience with other products suggests that sales revenue will increase at about 2 percent per month for the first year. You can tell Prism to simulate the first month using your initial probability distribution, then increase the val-



BORN TO RUN

When you're ready to stop working in slow motion, you're ready for the speed and raw power of the CPU Mini 286.

You'll crunch those numbers and muscle through those words faster than you ever thought possible. With your choice of models that race along at 8, 10 or a screaming 12 megahertz. So fast that regular PCs look like they're sleepwalking.

And our systems don't run out of gas either. Because endurance comes built in. So you can keep on running just as fast as you can.

We even give you a smaller box, with a footprint 20% smaller than the IBM PC/AT. Better yet, our systems are fully compatible, cost thousands less and run up to 50% faster.

Best of all, systems start for as low as \$975. All backed up with a full one year warranty. And an unconditional 15-day money back guarantee.

Call us today for advice on how your system should be configured. (For the more sedate, we also offer the CPU Turbo which only runs three times faster than the IBM PC/XT. For the real speed freak, ask us about our new CPU 386. It's outrageous.)

Call 1-800-824-2936. In California, 1-800-662-6111



ited
oducts United, Los Angeles, California

faSter. IBM XT and AT are registered trademarks of IBM

ADVANTAGE



EXPERIENCE



Experience counts.
Kaypro Corporation's
35 years of electronic
products innovation can
be seen in every detail of
the new KAYPRO 386.
In speed, power, and
performance, the
KAYPRO 386 is at the
head of the class.

Time is money.
The KAYPRO 386, powered by Intel's 8036 powered by Intel's 8036 microprocessor, runs most popular software wos to three times faster.
And when the pressure's on, every second counts. Whether it's engineering, business, networking, or any high-power pursuit, the KAYPRO 386 makes sense. Starting at \$4995, even the price makes sense.

Kaypro Is Computers. From the no-nonsense KAYPRO PC to the world's Jirst AT-286i, Kaypro is computers. As with all Kaypro products, the KAYPRO 386 is backed by service and support that ensures maximum benefits for you and your business. And the advantage? Experience.

pure and simple.

Seeing Is Believing.
To Jully appreciate what
the KAYPRO 386 can do,
see it in action at your
nearest Kaypro dealer.
Put the KAYPRO 386 to
the test. It's faster than
you think.





Kaypro's Commercial Leasing



Kaypeo's Revolving Charge Plan

Trademarks: IBM and AT are trademarks of international

For the Kaypro dealer near you, call 1-800-4KAYPRO.

Business Machines, Inc.: Intel. Intel. Corporation.

■ DECISION SUPPORT

rism plots probability distributions for input or output variables, giving a good understanding of the results you could expect in the real world.

ues it chooses by 2 percent when simulating the second month, 4 percent for the third month, and so on. Making values change with time also helps simulate real events, such as inflation, depreciation, or other regular processes. This belos to account for systematic effects as well as unpredictable effects.

SENSITIVITY ANALYSIS Sensitivity analysis ascertains which input variable is most important to the final result. Prism might say that the selling price has the largest effect on profit, in which case you might want to improve the model by doing market research to pin down the selling price. If Prism indicates that variations in manufacturing cost cause large profit swings, you could estimate manufacturing costs more carefully.

You can always get better data by spending more money: you can hire market researchers, do trial manufacturing, or advertise and see how many orders you get. Sensitivity analysis helps decide when it's worthwhile to get better data and when it's not

Prism plots probability distributions for input or output variables. This gives a good understanding of the results you could expect in the real world, provided that you guessed the input values and their distributions appropriately. Tempus released an enhanced color version of the program in July, which should help make the plots clearer.

Prism's help screens tell what you can do at any point, but not how to do it. It



\$1040

takes some fiddling with the menus to find out how they work, and there are a lot of menus. Expect to spend some time learning *Prism*. The documentation is pretty clear about what simulation is, but you

should understand basic probability theory and modeling because these concepts are not covered thoroughly.

Tempus claims that Prism runs in 512K bytes, but that's tight. Now and then it disTempus does a good job of making *Prism* as simple as it can, but it is still very complicated. Expect to need help.

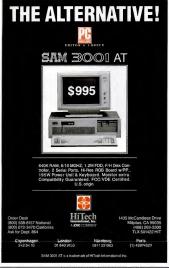
plays the message "Memory problem displaying this help file. Try again later." According to Tempus, most users figure out how to use Prism pretty well, but have trouble developing suitable models and deciding which probability distributions to use for inputs. The company does a good job of making Prism as simple as it

can, but it is still very complicated. Expect to need help. Prism is a powerful program that makes your PC work to earn its keep, and it's one of the few programs 1've seen that does enough arithmetic to benefit from a math coprocessor chip. It takes time to learn how to use, but the results can be well worth the effort.—William Taylor

What'sBest!

What *Best!, from General Optimization, neatly wraps itself around Lotus's 1-2-3 or Symphony to let you do linear programming inside a spreadsheet. It's hardworking and easy to use, and if you have problems that lend themselves to linear programming, What *Best! could pay for itself quickly despite its price of \$995.

The What sBest program is divided into two parts. First comes a small, memory-resident routine that you run first. Hatses up 8K bytes of RAM and work of RAM and RAM a





FACT FILE

General Optimization Inc. 2251 N. Geneva Terrace Chicago, IL 60614 (312) 248-7300 Llst Price: 640K ver-

sion, \$995; 448K version, \$995; 256K version, \$149. Requires: 256K, 448K, or 640R RAM; any release of 1-2-3 or Symphony, Release 1.1 or later; two disk drives; DOS 2.0 or later. In Short: A companion programming products that solves linear-programming mobilers by unjee versedeber data. Some-

problems by using spreadsheet data. Somewhat slow. Eats lots of disk space. Not copy protected.

CIPCLE 636 ON READER SERVICE CARD

If you used What'sBest! to solve the problem in the sidebar "Imagine You Make Muffins," you would first set up a spreadsheet that included the mathematical relationships between number of muffins and profits, and number of muffins and amount of batter used. This is trivially simple.

You would then specify the constraints to the problem: you can't make more than 200 apple or 300 blueberry muffins, and you can't use more than 1,600 ounces of batter. You would then tell What sBest! to vary the number of different muffins to make so as to maximize the total profit figure. In effect, you prepare What sBest! by

hat'sBest! neatly wraps itself around Lotus's 1-2-3 or Symphony to let you do

Symphony to let you do linear programming inside

a spreadsheet.

indicating to it which relationships and values from your spreadsheet to plug into its own, internal linear-programming equations.

Once you've done that and given

What'sBest! the green light, it takes over. It saves your spreadsheet to disk and flashes status reports on the screen as it does its magic. Once it's found a solution, it reloads your spreadsheet and displays

Push Button Micro-Mainframe Computing For Your Entire User Base

Computer Professionals Create and Package Custom Applications

Create and Package Custom Applications quickly and easily A Scripting Language for automating PC mainframe sessions

mainframe sessions
Mainframe Dutabase Extracts delivered to
PC products
Simple interactive Mean Manager for all

Sample interactive mean stranger on an DOS applications + keystroke macros CICS, TSO, VM, VAX, Wang, Compestat — all available from a single mean High performance File Transfer identical across ayench and bisyach lines — 100% error free Asynchronous and bisyachronous communications support for SNA & LANS

asynchronous and bisyach innes — turn error irre Asynchronous support for SNA & LAN'S in a single product, all the tools to build any application your company may aced

Business Professional Executive Workstations

Data Integration directly into spreadsheets

Electronic Mail

Printing and viewing mainframe and PC reports

utomated PC and mainframe sessions with ush of a button

terface to 1-2-3, Symphony, PROFS & ane III

Call or send for a 30 day free trial...

and will show you will not be provided in a competitive as officiary. As well as now his properties as officiary. As well as now his properties are similarly your composes communications. Some service of the competitive and the competitive are similarly and the competitive are similarly as the competitive are standardizing on contraver PC. Take and well as the competitive are similarly competitive are standardizing on contraver PC. Take a competitive are similarly competitive are similarly competitive and competitive and specific and competitive and specificial are similarly competitive and competitive and specificial are similarly competitive and specific and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose a 46 for extraction of the competitive and specific and suppose and the competitive and specific and suppose and the competitive and specific and suppose and the competitive and suppose and the competitive and specific and suppose and the competitive and specific and the competitive and specific and suppose and the competitive and specific and suppose and the

Gateway PC

The Corporate Standard

SCA Products and Services, Inc. 353 Lexington Ave., New York, NY 10016 212, 532,2990

CIRCLE 322 ON READER SERVICE CARD

■ DECISION SUPPORT

the results. If you understand both spreadsheets and linear programming, it's all easy to understand. There are a few rules for setting up constraints and for making sure that you have defined the problem so

that it's actually solvable, but the rules make sense and are well explained in the manual. The program disk also comes with several case study spreadsheets. You can load each problem into 1-2-3 or Sym-

30 DAY

MONEY BACK

GUARANTEE

phony and follow the instructions in the manual on how to bring linear programming to the rescue.

ADVANCED ANALYSIS What's Best! includes several advanced analysis features. You can solve some nonlinear problems by piecing together straight lines in a way that best approximates a linear relationship. You can also specify that combinations of resources be made in nonfrac-



There are many approaches to decision making. We suggest you look at the introduction to our reviews.

where we discuss what to use when before you make a selection. That's why we'll defer to your judgment instead of making an Editor's Choice Among the products reviewed here, Prism stood out as the most powerful, but it is pricey (\$895), touch to learn and install, and best reserved for mega-dilemmas.

tional amounts. If, for example, the muffins could be made only in batches of one dozen, you could build in this constraint. Also, at any point you can ask What'sBest! to find "dual values" for any of the constraints in a problem. For example, it could tell you what price you would have to pay if you wanted to buy more apples, blueberries or batter in order to make

more muffins and more money. What'sBest!'s one real drawback is the way it handles your spreadsheet. It has to save it to make room in memory for the linear-programming module and then retrieve it to display results. Furthermore, while What'sBest! is doing its work, it saves not just one but two copies of your worksheet to disk, so you have to have at least twice as much free space on your disk as the model would normally need. This usually isn't a problem with a hard disk, but could be a real bottleneck for floppydisk-based systems.

What'sBest! is a great way to add horsepower to your spreadsheet. -Jared Taylor

A ffordable A ccelerators INTRODUCING *■PC-EXPRESS*

We at TDM are pleased to introduce a new fa performance accelerators designed and manufactured with you in mind. We had one major design goal. Produce a family of accelerators which would clearly rove to have the best price/performance ratio in the accelerator market. For obvious cost advantages we have based our design upon the NEC V30 microprocessor and a very flexible method

of providing from 16 to 128K bytes of CACHE memory. You determine which of the 8 models, with 2 processor speeds and 4 memory sizes, will best meet your need PERFORMANCE - MOVE UP TO AT PERFORMANCE NOW! -

The PC-EXPRESS converts your 8 bit PC or PC/XT into a full 16 bit computer using the same cache buffer techniques used in large high speed mainframes. The 32K byte cache used in the Model 8/32 is 8 times larger than the cache used in other accelerators. The

126K cache used in the Model 10/128 is 64 times larger. This accelerator was designed with more than a one way set associative cache huffer AFFORDABILITY - The PC-EXPRESS is clearly moving the high performance accelerator market from the \$300 and up range to under \$200. Price should no longer deter you from purchasing an

accelerator COMPATABILITY - The PC-EXPRESS runs your valuable PC and PC/XT software without change.

This accelerator is 100 percent compatible with the computer in your PC or PC/XT MODES - With the flip of a switch the PC-EXPRESS supports either the ACCELERATOR or PC mode, allowing you to switch back to the PC mode for games and other software that must run at the slower PC speed.

APPLICATIONS - The PC-EXPRESS is ideal for spreadsheets, data bases, networks and other ate limited applications QUALITY - Every PC-EXPRESS meets the same high standards of quality you have experienced

with your PC or XT: designed with attention to detail, manufactured with the utmost care, tested to specification and burned-in for relability s we see it, its low price, high performance and 30-day money-back guarantee makes the PC-EXPRESS too good to pass up. For more information and benchmarks call us at (214) 296-9902.

Call Now To Order 1-800-648-1141

CACHE	8Mhz	10Mhz
16K	\$129	\$149
32K	\$139	\$159
64K	8149	\$169
128K	\$179	\$199

Total Design & Marketing 109 E. Cherry Street

Duncanville, Texas 75116

CIRCLE 253 ON READER SERVICE CARD

The Waiting's Over





is a trademark of TASC Sy

Autol/ISC

7825 E. Evans Road Scottsdale, Arizona 85260 (602) 483-7983

TASC Systems Corporation 7825 E. Evans Road complex drawings with speed and efficiency. TASC Systems Corporation markets AutdTASC through authorized dealers and valueadded reselbers. For the location of your nearest dealer contact TASC Systems at 602-483-47953.

AutoTASC performs floatingpoint calculations faster than existing coprocessors. AutoTASC, designed to optimize AutoCAD, lets you redraw, pan, and modify AutoCAD's most

----ED CEBRICE CARD

The American Success Story:



The CLUB 286 is manufactured and serviced in the U.S.A. As a proof of our commitment to quality and performance, we are offering same day shipping, high performance integration. 48 hour burn-in with the most up-to-date Intel parts.

Basic System Features:

80286 16-Bit Intel CPU / AT Style Keyboard
 512K Motherboard Expandable to IMB

8 Slots (2 8 Bit, 6 16 Bit)
 Clock Calendar with Battery Backup

195 Watt Power Supply 110/220V Switchable
 Fully Compatible High Speed AMI BIOS (Written in U.S.A.)

Fully Compatible High speed AMI BIOS (Written i
 Full 200 Page Users Guide in a Glossy Binder
 Limited One Year Warranty

Fully Open Front Face Panel

Option: • 1.2MB Floppy Drive /• 360KB Floppy Drive • 2 Hard Disk/2 Floppy Disk Controller /• Enhanced Keyboard • 1.44MB 3 1/2" and 720K 3 1/2" Drive

Dealers and Corporate inquiries are welcome

(415) 490-2201 FAX 490 2687 (24 HRS)

CLUB AT, INC. was founded with the intention to provide the customer with a high quality made in U.S.A. system that suits American tastes at import prices. Try our systems and find out why we have shipped more than 20,000 of them already. Our guarantee stands by you!

To Order a CLUB 286 SYSTEM

Call Our Computer Division from 7:30 AM to 6:30 PM P.S.T. Or 10 AM to 3 PM P.S.T. on Saturday. Our staff is standing by.

American
Technologies
Incorporated

3401 W. Warren Avenue, Fremont California 94539

IRMAT Xents AutoCad SPICKS IX DCS Novel*Surmers dBASE Letter.
Subhick, and Symphony are represent trademarks of their respective come.

Once upon a time. American led the world in innovation, quality, engineering, and manufacturing with names like Edison, Ford, and Bell...

Once Again America returns:



CLUB 286 8MHz Mono System

- · Basic System Features Plus . Fully Configured and Tested
- High Resolution 800 x 350 132 Columns
- · Monographics Card, Printer Port . High Resolution 800 x 350 IBM Quality Monitor

With a 20MB 1/2 HT 65ms Drive



With a 30MB Full HT 39ms Drive \$1495

CLUB 286 8MHz EGA System · Basic System Features Plus

- . Fully Configured and Tested
- . High Resolution Micro EGA Card
- . Capable of Mono, Color and EGA
- . IBM Quality Monitor (EGA/CGA), 14" Nonglare Screen

With a 20MB 1/2 HT 65ms Hard Drive \$1699 With a 30MB Full HT 39ms Hard Drive \$1899

. Basic System Features Plus / A 80286-10 CPU • Fully Configured and Tested / • Hercules Graphics 132 Columns

- . Video Adapter with Printer Port . A High Resolution IBM Quality 800 x 350 Monochrome Monitor
- 2 Serials, 1 Parallel Port / Wait State Inscrtible Slots • 8/10 Keyboard Selectability / • 12MHz Thruput

With a 40MB 1/2 HT 39ms Hard Disk \$2200 With a 30MB Full HT \$2129 39ms Hard Disk With a 40MB Full HT 23ms Hard Disk \$2499

CLUB 286 (12MHz Thruput) EGA System

CLUB 286 (12MHz Thruput) Mono System \$ 1629

Basic System Features Plus / • 80286-10 CPU

. High Resolution 16 Color EGA Card with Mono and RGB Output . High Resolution EGA Monitor, 14" Nonglare IBM Quality

 Wait State Insertible Slots / • 2 Serials/1 Parallel Port • 8/10 Keyboard Selectibility / • 12MHz Thruput

With a 30MB Full HT

With a 40MB 1/2 HT 39ms Hard Disk \$2540 39ms Hard Disk With a 40MB Full HT 23ms Hard Disk \$2870 Introducing a new generation of Extended EGA for PC and PS/2.

Smart EGA Plus. Double your screen resolution. Cut fear of obsolescence.



If you want to make use of all the power and resolution your multisync monitor can give you, without worrying about future software incompatibility disasters, we've got the EGA you've been looking for.

It's called Smart EGA Plus and it's designed to let you master all the possibilities of your multisync monitor.

Not only will it let you continue to run all of your favorite graphics programs, from CGA through EGA; you'll be able to run the emerging VGA programs on

your PC/XT or AT as well. In addition, it offers

In addition, it offers 800 × 600 resolution—more than double that of standard EGAs.

What's so great about all this extra resolution? Well, with 800 x-600 resolution you have 480,000 pixels filling up your screen, giving you much denser—and therefore brighter—colors.

For desktop publishing, CAD applications or making business presentations, you'll find Smart EGA Plus, with its 16 dazzling colors, exciting and satisfying to work with.

Drawings are crisper, colors are brighter, and more details can be seen on the screen. Alphanumerics are near print quality with a more natural, rounded look.

Your spread-sheets will be even more pleasing to the eye in our 640 × 480 or 752 × 410 resolution, as you'll see after spending some time with Lotus 1-2-3, Symphony, or Framework.

With our 132 column

feature you can choose between print-like letters in 25-line mode or packing extra spread-sheet information on the screen in 43-line mode.

Most important for your peace of mind, however, is the hardware compatibility you get with our unique proprietary chip. It's your insurance against present and future software incompatibility calamities.

There are dozens more Smart EGA Plus features we'd like to tell you about but, as you see, this ad is already bursting at its seams. If you'd like to know more, contact one of the better computer retailers in your area. Or call us. We'll be happy to fill you in.

Smart EGA Plus is made in the USA and comes with a 3year limited warranty.

List Price \$499.00 Telephone 1-800-772-3742 (In Mass. call 617-460-0717)

With our 13.

SIVI/

71 PLUS
From NSI Logic, Inc.

From NSI Logic, Inc. 259-B Cedar Hill Road Mariborough, MA 01752

MicroComputers of Canada Ontario, Quebec 1 800 263-3383 Other Provinces 1 800 387 4313

32-2-660-33-81, Belgium 49-089-4311361, West Germany 32-4902-41165, Netherlands 47-02-707550, Scandinavia 358-0-803-9044, Finland

PRODUCTIVITY

■ PC LAB NOTES: ENHANCING DOS ■ JEFF PROSISE

EXPANDING DOS AT THE TOUCH OF A FINGER

Get colors that stick, commands that stack, DOS keyboard macros, a command line editor, and a CLS that doesn't stop at line 25, all in one handy TSR program.

If beginners are confused by the complexity of the DOS command interface, power users are infuriated by its imitations. We your wish list of DOS additions has long been headed by color hardling, keyboard macros, improved editing capabilities, and a command stack. And, as every EOA user quickly discovers, while DIR and TYPE work fine with more than 25 screen rows, CLS does now, CLS does have 25 screen rows, CLS does now.

Refining the list with a view to implementing it myself (you'd grow old waiting for Microsoft), the color scheme should be one that you can set on the fly and that remains intact no matter what DOS throws at it-specifically including leaving BASIC. The keyboard macros should work only on the command line and not interfere with applications programs. Editing functions should more closely resemble those of word processors. The command stack should let you recycle whole sets of commands the way the F3 key now lets you reissue the last one. And, of course, CLS must be able to handle 38-, 43-, or even 50-line displays.

To do it justice, DOS makes at least half-hearted provision for some of my wants. The ANSI.SYS driver included with every purchase of the operating system allows you to assign strings to any key or key combination that normally produces a buffered keycode. It also lets you introduce color to the white-on-black world of DOS and provides a device-independent scheme for manipulating the cursor.

On the other hand, the instructions for ANSLSYS are buried in the DOS Technical Reference manual, a document most users will never see. This may actually have been aclever move by IBM, for the shortcomings of ANSLSY'S far outweigh is merits. With ANSLSY'S, for example, communications have to be routed through the standard output device and must conform to a less-than-intuitive command suck, and the standard output device and must conform to a less-than-intuitive command suck, and the standard output on the standard output to be the law of the standard output to be the standard output to be the standard output to be the standard output to the standard output

utility designed to make working with

PRODUCTIVITY INDEX PCLAB NOTES

DOSKEY lets you edit DOS commands, saving them as macros or in a stack.

PROGRAMMING/UTILITIES
DIRNOTES makes room for comments in your directory listings.

SPREADSHEET CLINIC
Range name renaming: DOS commands within Symphory.

CONNECTIVITY CLINIC
A sync/async auto-dialing modem;
LAN database choices; little LANs.
TURBO POWER USER
Parsing strings into words; fooling Turbo into saving new programs.
USER-TO-USER

Printer driver provider, saving the environment; fighting FORMAT C:. PC TUTOR Harmony for spreadsheets and text

files; exploring ANSLSYS.

DOS a little bit easier. DOSKEY lets you assign macros to function keys F3 through F10 (plus F11 and F12 if you have an enhanced keyboard), buffers the last 15 commands so you can flip through them with the Up and Down Arrow keys, implements command line editing, adds color to the teletype interface, and makes sure that CLS clears the entire viewing area. All in 4K of RAM.

The easiest way to get a copy of DOS-KEY is to download it by modern from the PC Magazine Interactive Reader Service, as explained in the sidebar accompanying the Programming Utilities column, elsewhere in this issue. For the intrepid keyboarder, DOSKEY, ASM and DOSKEY .BAS programs are listed here, as well as being available in PC-IRS.

USING DOSKEY DOSKEY is a resident utility that is to be loaded once and only once sometime before its services are required. Including it as a line in your AUTOEXEC. BAT file makes the installation automatic every time you boot up. Alternatively, from the DOS prompt, enter

[d:][path]DOSKEY

With DOSKEY installed, the P2 function key sets the background screen color. Each press of F2 clears the display and flips the background to the next color in the standard eight-color background palette. Shift-F2 does the same, except that moves through the circular palette in reverse order. F1 and Shift-F1 work in exactty the same way here for the 16 different

■ PC LAB NOTES

selectable text (foreground) colors.

The screen attributes you select won't change until they're intentionally altered with F1 or F2 or by an applications program that takes over and defines its own color scheme. When a program terminates and returns to DOS, you'll sometimes find vourself back in DOS's default white on black, but a quick CLS will always return you to your selected colors. Should you ever need to return to the DOS default intentionally, just put a space after CLS on the command line before you hit Enter. A subsequent CLS (without the trailing space character) will restore your customized interface. And, as advertised, even if you're working with a more-than-25-line EGA screen (see Programming/Utilities, Volume 5 Number 15), CLS will work as it should: every line displayed on the screen will be blanked.

Next come DOSKEY's function key macros. As program defaults, DOSKEY assigns the following strings to F3 through F10:

- F3 dir
- F4 type
- F5 copy F6 delete
- F7 chdir F8 path
- F9 browse F10 cls

commands

(The "browse" command listed above is Charles Petzold's BROWSE COM utility from Volume 5 Number 6. If you haven't got it yet, download a copy from PC-IRS. You'll wonder how you ever managed without i.) Pressing a function key on the command line will type out the text automatically, just as if you had manually entered it a character at a time. The State interpreter does the same sort of thing with the function (keys and appropriate BASIC

If you have an extended keyboard and your BIOS supports it (see the sidebar "The Enhanced Keyboard") DOSKEY takes advantage of the new FII and FI2 function keys. By default, FII spells out "backup" on the command line, waiting for you to enter a file specification and apportage to the propriate parameters after it and press Enter. FI2 does the same with "restore." DOSKEY also modifies interrupt 16h to

allow other programs, like BASIC, to take advantage of F11 and F12.

As you'll see in detail shortly, it's easy to modify DOSKEY's default keyboard macros to output the commands of your choice. Since each function key can handle a string of up to 31 characters, the potential keystroke economy is high. Further, when you add your own command macros, you can choose either to have them automatically executed when the function key is pressed or to have DOS wait for you to

■ It's easy to modify DOSKEY's default keyboard macros to output the commands of your choice.

press Enter. The former is useful for commands like CLS; the latter allows you to incorporate commands that are meaningless without additional command line parameters, such as TYPE and DELETE.

STACK 'EM UP Every time you enter a DOS command, DOSKEY intercepts it and stores it away where it can be recalled and recycled. Try it: with DOSKEY loaded, enter four or five commands (CHK-DSK. DIR *. COM, etc.) that you typically use during a PC session. Then press the Up Arrow key a few times. You'll see the commands you just entered replayed in the reverse order of entry. The Down Arrow key moves you back towards the front of the stack and your last command, ultimately returning you to an empty command line. If you want to reset the current-command pointer quickly back to the head of the stack, just press Esc. Then the next press of Up Arrow will display the most recently entered command, regardless of where you were in the stack when you hit the Esckey

When you reach a command you want to execute, just press Enter. DOSKEY buffers the last 15 commands in a rotating internal command stack. When its limit is

surpassed, the 15th command is pushed off the stack to make room for the latest one you have entered.

If you haven't accidentally discovered them already, you'll want to take some of DOSKEY's command-line editing features for a test drive. For editing DOS commands, DOSKEY gives you everything you'd expect from a small text editor. You can edit any command line. whether you typed it yourself, invoked a function key macro, or recalled it from the stack. The Left and Right Arrow keys let you move around on the command line. and if your entry extends beyond one screen line, you're no longer prevented from going back a line. Del and Backspace erase characters, drawing in anything to the right of the cursor. The Home and End keys pop you instantly to the beginning and end of the line, respectively, and Esc erases the command line completely.

If you hit the Ins key, you'll find you can insert characters on the fly. As with DOS, overstrike is the default mode, but if you toggle the Ins mode on in DOS, then run a program in which it gets changed, when you return to DOS the Ins mode will be just as you left it.

INSIDE DOSKEY The primary difference between DOSKEY and other resident utilities is that it must be strictly restricted to working only on the DOS command line. You can't grab the function and cursor keys indiscriminately and avoid interfering with applications programs and other TSRs.

When DOS wants to read a command ince entry from the standard input device (usually the keyboard), it executes an in-terrapt 27 he with AH set to 0Ah and DS DS pointing to an internal DOS buffer each character, exholing it to the screen and placing it in the DOS command line buffer. It is here that DOS's cultimated cies originate; for, apart from a few clumy capabilities tacked onto function keys FI through Fs. DOS inaction OAh lets you do the property of th

DOSKEY implements its own function 0Ah handler. This custom routine provides the full editing, command stack, macro, and color features described above. The



SPECIAL WORD PERFECT \$195

Call for programs not listed

TOLL-FREE ORDER LINE 1-800-421-3135

219

Cell

Call

72

FREE SOFTWARE! Purchase over \$100 and re-ceive one of these disks absolutaly FREE! Purchases over \$250 get two free diaks, over \$400 get three, or get all four over \$500(1) MIXED BAG -A great assortment of utilities and games all packed on one disk 2) PC-WRITE - Try this famous feature packed word processor It's a winner! 3) FONT-SET - Lats you set popular fonts like bold, underine, etc. on most lete model printers from Citizen, Epson. NEC. Okidala, Panasonic, Slar, Toshiba, etc. You can aven use your printer like a typewriter! 4) ABC-LIST — Great mailing list progrem? Sort on any field, do qualified

searches, print reports and mailing lebels, and more! - SOFTWARE -**ACCOUNTING**

BPI AP. AR. PR. GA \$169 aa .. Call Dac Easy Accounting 39 Dollars & Sense ... Managing Your Monay 3.0 117 COMMUNICATION PROGRAMS

Carbon Copy Plus..... Remote Smartcom II 83 DATA BASE MANAGERS Clipper.. Clout 2 Condor III Knowledgeman II

Q&A Quickcode Quickraport Revalation R. Base Systam V EDUCATIONAL Flight Simulator

Turbo Tutor II 25 Typing Tutor III Call GRAPHICS 294 Energraphics 2.01 Microsoft Bus Mouse . . . Microsoft Chart Microsoft Senal Mouse 119 31 OPTI Mouse W/DR Halo II 96 Printshop.....

INTEGRATED Ability.... Enable 355 Smart Software No Charge for Master Card or Visa

LANGUAGES Lattice C Compiler ... Microsoft C Compilar Microsoft Fortran 4.0 Microsoft Macro Assembles Microsoft Pascal Compiler Microsoft Quick Basic 3.0 . . . Ryan McFarlan Fortran Ryan McFarlan Cobol ... Turbo Basic

Turbo C Turbo Pescal w/8067 + BCD. PROJECT MANAGER

Harvard Total Project II 326 Super Project Plus Timelina 2.0

SPREADSHEET Microsoft Multiplan. Spreadsheet Auditor 3.0

UTILITIES Copy II PC Copywnia Desgview 2.0 Double Dos..... Fastback ...

Graph in the Box..... Homebase... Microsoft Windows Norton Utilities 3.1 Q DOS

Sideways 3.1..... WORD-PROCESSING Easy Extra.....

Microsoft Word Multimata Advantage II Volkswriter 3 Word Perfect Wordstar . Wordstar Propac

- HARDWARE --**ACCESSORIES** Copy II PC Board 150 waft power supply

Mini Micro Parallal Print Buffar Masterpiece . Masterpiece Plus BOARDS

AST Advantage Premium AST Pramium Sixpac . . . AST Sixpac (384K) Hercules Color Card... Hercules Grephics + . . . Intal Above Boards J Laser (Tall Tree) J Ram 3 (Tall Tree) ...

145 182 RT Style Keyboard J Rem 3 AT (Tall Tree)..... TOLL-FREE ORDER LINE 1-800-421-3135 WAREHOUSE DATA PRODUCTS

COMPUTERS **AZ 386** 80386-16 Micro Processor 1 MB of Ram, Teac 1.2 MB disk drive. 220 weft power supply, 6 layer mother board. RT keyboard\$2995

AZ TURBO XT IBM Compatible Computer 135 wett power supply. 1 brand name floppy disk 1 parallel port, 1 serial port, 1 gams port PC keyboard 640K Ram, 8 expansion slots

8088-2 processor . . \$51900 AZ TURBO AT IBM AT Compatible, 512K. 6 & 8 MHZ, keyboard. graphics card, 220 walt power supply, MS/DOS 3 2 GW Basic \$1025

AST 286 PREMIUM COMPUTER 512K. expandable to 2MB on the system board, RT anhanced style keyboard. parallel, senal and clock, 1.2 MB floppy disk drive 7 axpanaion alots, two 32 bit fastram slots, DOS 3.1

& Basic 1 year warranty Call EGA BOARDS Paradise Auto Switch 480 EGA Card Quad EGA Plus

EGA MONITORS AMDEK 722 Craper EGA Call NEC Multisync.....

HARD DRIVES AZ 20 MB Hard Card AZ 30 MB Hard Card Cell Filecard 20 MB Maynard 20 MB Hard Card . Plus Hardcard 20MB Seagate 20 MB Int. w/cont. 309 Seagate 30 MB Int w/cont.

Seegate 30 AT Int..... KEYBOARDS Keytronics 5151 Keytronics 5153

INCREDIBLE VALUES Nationally advertised boards for IBM PC and most compatibles at give away prices Keyboards (similar to 5151) .

Monochrome Board w/printsr Expansion Board\$79 Four Drive Floppy

Controller... Color Card w/o printer port. Color card w/printer port \$79

MODEMS Everex 300/1200 Hayes 1200 Hayas 1200B U.S. Robotics Couner 2400

U.S. Robotics Passwd, 1200 MONITORS AMDEK 410 Amber . . AMDEK 600 Magnovox Color RGB Princeton Max 12

Samsung TTL Amber Samsung Color w/bit/lum PRINTERS CANON LASER CITIZEN

MSP-10 ... MSP-20 Premiere 35 Daisywheel ... EPSON - Call on all models LASER IMAGE 2000 NEC PEXLP NEC P7 Paratlel NEC 8850 ...

NEC P6 Parallel NEC P960XL.. NEC Lasar OKIDATA - Call on all most PANASONIC

1150

STAR MICRONICS NP10 ... NB24-10 NX10 TOSHIBA - Call on all mo RAM 64K 150NS (set of 9) 256K 150NS (set of 9) 256K 120NS (set of 9)

Phone Hours: Monday, Wednesday & Thursday 7 am-9 pm; Tuesday & Friday 7 am-5 pm; Saturday 9 am-5 pm; MST.

	for the 13M Personal Computer -		1	014	colear DF
dos_dets	engment at 48h org 17h 4b 7	18105 Data Area Ishift statue byte		rep moveb inc stackptr omp stackptr.is	scopy string to command stack supdate pointer swrap around if necessary
	org 86h		10	jne doe4 mov stmckptr,0	
rt_ross	db 7 erg #7h db 7	inumber of display rows	50441	mov ax,steekptr mov looptr,ex	:eet LOOPIR - STACEPTR
ga info	db 7 ands	IRGA INFO byse		mov scount.8	:Initialise base sero pointer
ote	segment para public 'codo'		ifiee if th	command just entered was CLS	
	ascure rerende org 19th jmp initialize		1.	mov si,dx	(point 20:9) to new string
egin:				edd al.2 mov dl.offset cle_text	sand MS:DG to 'CLE' text
opyright	db 'Copyright 1997 Elff- db 'Jeff Froster'	Davis Publishing Co."	dosti	mov cx,4 lodeb	ifour bytes to check ignt one byte
is test	49 (014) 13			and el.#EPh speak	capitelise obsester
	db 'CLS', 13 dr 8 dr 7	itest of clear screen command iprimary command stack pointer		jne doet	yeo the bytes eatch? I'vo, then CLB wass's entered I'ves, then check another byte polars the serven I'vess SI to count byte polars atring free DUB buffer
coptr		primary command stack pointer improviding command stack pointer intark pointer relative to ware		loop doef call clear screen	jointr the screen
ount pafing serrifing	6b 8 db 8	(0-so NGA, 1-9034 Installed (status of insert state	1.	mov (s1),0200h	colear string from DOS buffer
regreend sekground	6 7	courrent foreground color	Restore r	nginters and exit.	
	dh B dw 7	1000 Input buffer segment	do48:	pro ne	restors registers and exit
diame.	65 7	1995 Input buffer megment than display column number ;buffer index		pop dx	
ext	46 4 1414 1 27 4m (8)	recommend limited to \$2 kmg		pop at	
	dh 5, 'type ',28 dup (8)	command linked to 74 kmg command linked to 75 kmg command linked to 75 kmg command linked to 75 kmg command linked to 77 kmg			
	db 4. del 1.27 dup (8)	received linked to F6 key		pop bx pop ax iret	
	do 4, "dir", 27 dup (8) db 5, "upe 1.28 dup (8) db 5, "upe 1.28 dup (8) db 5, "copy 1.28 dup (8) db 6, "chdir", 1.25 dup (8) db 7, "chdir", 1.25 dup (8) db 7, "brown 1.24 dup (8) db 3, "clail", 255 dup (8) db 5, "clail", 255 3, 3 dup (8) db 6, "frestorn 1.23 dup (8) db 6, "frestorn 1.23 dup (8)	remmand linked to F7 key remmand linked to F8 key	dowlet	liret mado	
	dh 7, 'browno ',24 dup (8 db 3, 'cin',250,27 dup (8	i command linked to FS key command linked to FIS key remembed linked to FII key	1		
	db T, 'borkup ',24 dap (8	i research linked to Pil key loomand linked to Pil key	LINGUT rea	is an imput string from the at	enderd imput device.
	ishel dword		Imput	proc near	
dZih 6 int 10		Interrupt 21h vector Old vector	(Record VI	teo information and initialize	parameters.
0_100_10		1 019 vooter		mov ah,18 int 19b	iget video page and columns
celat rout	ine intercepts onlin to interru	of Zih.		Int 19b dec ab	icalculate wax column number
mint	DEGC BOAF			mov octumes, ah	point #5:00 to buffer
	is a request for DOS function :			pop as nov 61,6x	Ibotut moint to souteh
nee 11 title					
	one ab. 64h	irestore interrupte		nov el.6x	spoint 26:81 to character count
on exit:	omp ah. OAh je domi jmp dom int	iyes, then continue		mov byte ptr (e1),0 mov bufferptr,1	(sero initial count
oal:	onp doe asgment,0	iyes, then continue inc. then exit to DON routine just entry occurred before? iyes, then beauch		clé	clear DF
	commend stack and record IS valu		Wait for	keyoods to appear in the key	bound buffer
			getkey	mov ab, 80h	
	nov dos segment, da punh ex	record DOS date segment seve CX and S1	getkny	mov sh. 60m int 21m or si.si	scheck begboard buffer for keye
	push ex push al	record DOS date segment seve CX and SI initialize command stack area	getkny	or el.el jne gatcher	scheck begboard buffer for keye
102	push ex push al mov cx,2s			or el.el Jne gatcher int 28h Jmp getkey	scheck legiousé buffer for kege sengthing there? sues, than go got it ino, then execute interrupt 28 sloop back for moother try
1021	push es push al mov cr.2s mov si.offset initializa mov byte ptr cs:[si].0 add ci.128			or el.el jne gatcher	scheck legiousé buffer for kege sengthing there? sues, than go got it ino, then execute interrupt 28 sloop back for moother try
1021	push es push al mov cr.2s mov si.offset initializa mov byte ptr cs:[si].0 add ci.128			or el.el jme gatcher int 38h jmp getkey msycode and process it if it's mov sh.8	scheck legiousé buffer for kege sengthing there? sues, than go got it ino, then execute interrupt 28 sloop back for moother try
	push tel push al nov cx,2s nov ai,offset initialise nov byte ptr cer(si).0 and si.12s loop dosd pop el pop el	initialize command stack area	Send the	or el.el jme gatcher int 38h jmp getkey msycode and process it if it's mov sh.8	icheck keyboard buffer for keye isnything there? Iyas, than go get it iro, then secute interrupt 200 ilop back for another try not an extended code. Iread character from buffer
lee if the f	push es push es mov signature initialism mov signature en [si].0 and si,120 ion ensi jop esi jop esi jop co.	Initialize command stack area Irextore registers	Send the	or elusi jee gatcher int 28h jee gatterg ssycode and process it if it's mov sh.8 int 21h or missi je ssoods	icheck keyboard buffer for keye isnything there? Iyas, than go get it iro, then secute interrupt 200 ilop back for another try not an extended code. Iread character from buffer
ee If the I	push es push els mon al effect initialise mon bute ptroc(el).0 add el.122 see el see els pop es push es els came froe DOS.	Initialize command stack area Irextore registers	Send the	or size! joe gatchur int 200. joe patchur int 200. joe patkup suycode and process it if it's mor wh.8 int 21h or mi.mi je stoods omp mi.8 joe patch	check beyboard buffer for keys swyshing there? Iven, than og oat interrest zme Iven ben oat interrest zme Iven the swyshing of the Iven the beneden the control of the Iven the beneden the control of the control of the Iven the beneden the control of the control of the Iven the beneden the control of the control of the control of the Iven the control of the control
lee if the f	yeah es pook al nov ex. offees initialize nov ex. offees initialize nov but pir ex. (ai).0 add si.120 loop dook pop ex push bx push bx nov bu, de	initialize command stack eras irextore registers inexe EX register iget 05 in EX for compare	Send the getchar:	or size! joe gatchur int 200. joe patchur int 200. joe patkup suycode and process it if it's mor wh.8 int 21h or mi.mi je stoods omp mi.8 joe patch	coheck leghourd buffer for kegg senyshing thereff in 1970. Thes securis interrupt 288 1109 beek for another ruy not an assende dode. reed character from buffer iza it an extended code? rupe, these branch peo, these branch ruy these branch ruy these branch ruy these branch ruy these branch ruy these branch
ee If the I	push es push els mon al effect initialise mon bute ptroc(el).0 add el.122 see el see els pop es push es els came froe DOS.	Initialize command stack area Irextore registers	Send the	or size! joe gatchur int 200. joe patchur int 200. joe patkup suycode and process it if it's mor wh.8 int 21h or mi.mi je stoods omp mi.8 joe patch	check leghourd buffer for keys savghling thereof it 170. These securic Interrupt 280 170. These securic Interrupt 280 170. These securic Interrupt 280 170. The securic Interrupt 280 170. The securic Interrupt 280 170. The security 280 170. Th
se if the f	yeah es pook al nov ex. offees initialize nov ex. offees initialize nov but pir ex. (ai).0 add si.120 loop dook pop ex push bx push bx nov bu, de		Send the getchar:	or sist sisteman s	check legboard buffer for keys swyshing sheard is swyshing theard is swyshing the secular interrupt 200 100, these secular interrupt 200 1100; beat for another try not an extended code. I read charrotur from buffar is it as extended code? I yes, then bracet stackuppes may? I would be the swyshing out a character jeture, to loop
se if the f	pumb es por ca;28 nov ai,27 nov ca;28 nov ai,27 nov ca;21 nov ai,27 nov ca;21 nov ai,27 nov ca;21 nog cax poo d;		Send the getchar:	or el.al jne gatchar jne gatchar jne gatchar jne gatchar jne gatchar sworth in the same sworth in the same sworth in the same jne gatch jne gatch	cobook keptoach buffer for kept swything buffer for kept swything buffer for the swything buffer for the swything buffer for another try swything for another try swything for another try spectage for another try spectage for another for buffer spectage for another for buffer spectage for another for buffer spectage for another for another spectage for another spec
se if the f	youh es sor ca.28 sor al.47 per initialism sor al.47 per cat[s], a add s].18 add s].18 por some por cat[s], a add s].18 por some por cat por some por cat por sor por cat por sor por cat por ca	initialis command stack area irextore register seave EX register seave EX register seal percend from command line? sold percend from command line? sold percend from command line? sold percent from command line? specifies up the seat seave search search seat seat seat seat seat seat seat seat	Pend the perchars	or el.al jne gatchar jne gatchar jne gatchar jne gatchar jne gatchar sworth in the same sworth in the same sworth in the same jne gatch jne gatch	ichock kepbanch buffer for kept kemplang khar go gai i ing kan go gai i ing kan go gai i ing kan go gai i ing kan gai kepangan gai rasa da saundad doda. Iran a kanadad doda. Iran a kanadad doda. Iran kanada doda.
se if the f	youth en' correction of the state of the sta	initialis command stack area irextore register seave EX register seave EX register seal percend from command line? sold percend from command line? sold percend from command line? sold percent from command line? specifies up the seat seave search search seat seat seat seat seat seat seat seat	Send the getchar:	or eladi por ela	ichock kepbanch buffer for kept kemplang khar go gai i ing kan go gai i ing kan go gai i ing kan go gai i ing kan gai kepangan gai rasa da saundad doda. Iran a kanadad doda. Iran a kanadad doda. Iran kanada doda.
se if the f	youth en' soor ca.29 soor al.offest initialism soor al.offest entisi.30 pound but soor but.do soor but.	initialis command stack area irextore register seave EX register seave EX register seal percend from command line? sold percend from command line? sold percend from command line? sold percent from command line? specifies up the seat seave search search seat seat seat seat seat seat seat seat		or el.al jne gatcher jne gatch	contest beginner boffer for weight country to the c
se if the f	youth or more against initialities more rained part extingles, initialities more rained part extingles, and a size of the part	initialize command stack area restore registers uners SE register uners SE register ups SE in SE for command live? pers self-self-self-self-self-self-self-self-	Pend the perchars	or i.a. drops or i.a. drops jeg griden soo ah, and ah, soo ah, for i.a. drops soo ah,	contest beginner boffer for weight country to the c
se if the f	Just by Just by The Company of the	initialize command stank area rectore registers		or sixthme or sixthme in See Jap Grant Jap Grant Jap Grant Jap	ichock kepbanch buffer for kept kemplang khar go gai i ing kan go gai i ing kan go gai i ing kan go gai i ing kan gai kepangan gai rasa da saundad doda. Iran a kanadad doda. Iran a kanadad doda. Iran kanada doda.
me if the i	youth or more and the more and	initialize command stack area restore registers uners SE register uners SE register ups SE in SE for command live? pers self-self-self-self-self-self-self-self-		or its distinct property of the property of th	contest beginner boffer for weight country to the c
me if the i	youth or more agreed in tight in more specified by the critical part of the country of the critical part of the cr	initialize command start area irectors registers eners El register eners El register eners El register eners el resonance initialization de la recommendad plant Mend the perchars	or sighthmap or	ubode separate before for wear suppless the second conversed 120 to the second	
me if the i	youth or more and the more and	initialize command start area irectors registers eners El register eners El register eners El register eners el resonance initialization de la recommendad plant inhead the geschar; geschi ; geschi ; geschi ; geschi ; geschier; ; illend the the control of th	or list have been a list live list list live list list list live list list list list list list list list	choice sequence buffer for regularity control of the control of th	
me if the i	punk for a construction of the construction of	Treatment registers Treatment	Mend the perchars	or late has been considered by the considered by	places implaced before for age assuming a supplication of the control of the cont
me if the i	punch for a company of the company o	installar common each ore remained each ore common each or common each of the common each	inhead the geschar; geschi ; geschi ; geschi ; geschi ; geschier; ; illend the the control of th	or late has been considered by the considered by	schools beginnen before for was a supplying them. I supply to the supplying the supplying the supplying to the supplying the sup
ise if the d	and to a second of the second	initialize command start area irectors registers eners El register eners El register eners El register eners el resonance initialization de la recommendad plant inhead the geschar; geschi ; geschi ; geschi ; geschi ; geschier; ; illend the the control of th	The state of the s	ubous separate before for war surphish planes in a standard serving 1 me of the servin	
oe5: Det a comman	published and the second of th	Treatment registers Treatment	inhead the geschar; geschi ; geschi ; geschi ; geschi ; geschier; ; illend the the control of th	The state of the s	school separate before for years assistance between the separate before the years as a second color of the separate before the
ise if the d	your and the property of the p	Installate command stack area Freshare registers Installate of the company (and in the com	inhead the geschar; geschi ; geschi ; geschi ; geschi ; geschier; ; illend the the control of th	or late has been considered by the considered by	schools beginnen terffer for was successfully about the second of the se
ise if the d	published and the second of th	Treatment registers Treatment	inhead the geschar; geschi ; geschi ; geschi ; geschi ; geschier; ; illend the the control of th	The Lathburg Library of the Control	school sequence of the property of the sequence of the sequenc



Basic Publisher

- DP-286/10, Intel 80286-based computer with 1MB of memory, Phoenix ROM BIOS, AT-style keyboard, 1.2MB diskette drive and controller, 200-watt power supply, clock/calendar with battery backup.
- Amdek 410W monitor with twelve-inch, black and white, flat screen; monographics card included.
- 20MB Seagate fixed disk drive (65 ms average access time).
 Eoson LO-800 24-pin, near letter-quality
- dot matrix printer.

 Logitech serial mouse and I/O card with
- serial port and second parallel port.

 MS-DOS operating system.
- Microsoft Windows, including Windows Write, Paint, Terminal, Clock, Notepad,

Calendar and more.
\$1995 24-Month Lease \$108 Mo. 36-Month Lease \$78 Mo.

Preconfiguration, Leasing, & Software All systems come fully pre-configured-just plug in the cables, turn the system on, and the system enters your desktop publishing

Leasing is available to registered businesses that have good cordit references and have been in business for at least two years. Revolving credit accounts are available for individuals. Call for more information. You can replace the Aldus Pagemaker Microsoft Windows software with X erox Ventura Publisher in any WYSIWYG system, at no extra charge.

Standard Publisher

- DP-286/10, Intel 80286-based computer with 1MB of memory, Phoenix ROM BIOS, AT-style keyboard, 1.2MB diskette drive and controller, 200-watt power supply, clock/calendar with battery backup.
- EGA color monitor with thirteen-inch screen; enhanced graphics adapter card included.
- 40MB MiniScribe fixed disk drive (28 ms average access time).
- High-speed, 300-dot-per-inch laser printer.
 Large selection of soft fonts, including Times Roman and Helvetica, soft fonts in sizes 6 through 30-point, in Roman, bold, and
- italic styles.

 Logitech serial mouse and I/O card with serial port and second parallel port.
- MS-DOS operating system.
 Microsoft Windows, including Windows Write. Paint. Terminal. Clock. Notepad.
- Aldus PageMaker software for multi-column layouts, integrating text and graphics, importing files from other programs, and more.

Calendar and more.

\$3995 24-Month Lease \$211 Mo. 36-Month Lease \$151 Mo.

Already Own An AT-compatible?
The Standard Publisher Kit includes the peripherals and software you need for a complete desktop publishing system: laser printer, soft fonts, mouse and I/O card, MS-DOS, Microsoft Windows, and Alder Pastemaker. \$2295

The Professional Publisher Kit includes: Postscript laser printer, mouse and I/O card, MS-DOS, Microsoft Windows, Pagemaker, Windows Draw and Clip Art. \$4995

Desktop Publishing Suddenly Affordable

A truly turn-key system:
we combined the most widely
accepted desktop publishing software
with quality, state-of-the-art hardware
to provide you with cost-effective
desktop publishing solutions, all
preconfigured and ready to go.

Professional Publisher • DP-286/10, Intel 80286-based computer

- with 1MB of memory, Phoenix ROM BIOS, AT-style keyboard, 1.2MB diskette drive and controller, 200-watt power supply, clock/calendar with battery backup.
- Genius full-page black and white monitor with adapter card.
- 40MB MiniScribe fixed disk drive (28 ms average access time).
- High-speed, 300-dot-per-inch laser printer with industry-standard Postscript interface and over thirteen built in typefaces, including Helvetica, Times Roman, Courier, Avant Garde, Schoolbook, Palatino, Bookman, and more.
- Logitech serial mouse and I/O card with serial port and second parallel port.
- MS-DOS operating system.
- Microsoft Windows, including Windows Write, Paint, Terminal, Clock, Notepad, Calendar and more.
- Aldus PageMaker software for multi-column layouts, integrating text and graphics, importing files from other programs, and more.
- Micrographx Windows Draw. including the Micrographx clip art collection.
 24-Month Lease \$423 Mo.



A Division of CompuAdd Corp.
Call toll-free as 800-635-8635
Inside Texas 512-331-5797
Technical support 512-331-5085
12303-G Technology Bhvl.
Austin, Texas 78727

ow to keep up with



concurrent events



Introducing Paradox 2.0. More power for single users, unbaralleled bower for multiple users.

New Paradox* 2.0 puts the power of the emerging relational database standard into everyone's hands. Single users and multiple users. Now everyone you work with can share information in a way that no other multiuser PC database can offer.

For single users, Paradox 2.0 improves the standard that Paradox 1.1 set for ease of use, speed and power.

For multiple users, Paradox 2.0 offers that same performance plus the unequaled ability to edit, browse, query, sort and report a file concurrently—to get information in real time.

Same time, same network

The multiuser capabilities of Paradox work like an airline reservation system, where people share and update information constantly. Without getting in one another's way. This transparent, concurrent data sharing lets users do things that are impossible in other PC darabases.

For example, other databases often lock entire files, or else lock records in a way that makes the data below inaccessible.

Paradox 2.0, on the other hand, lets users edit, browse, query, sort and cratare reports in the same file at the same time. Records lock automatically, telling others the user's name, and leaving data below accessible. When revisions are made, the changes appear on all screens in real time. Or at a set interval. With all these features, Paradox helps more people get more done.

This performance comes without the noticeable speed loss that plagues most multiuser databases. But advanced multiuser capabilities are just some of the

Expanded coverage

Paradox has kept its familiar Lotus*-like interface and artificial intelligence to simplify operation and hide complexity from the user. On top of this, we've added more performance for single users, new users and developers.

Our intuitive "query by example" now has a "Zoom" command that pinpoints data faster. Paradox 2.0 supports up to two billion records along with EMS and EEMS to speed processing of your largest anolications.

Reports have new features like word wrap and multicolumn mailing labels. And thinking ahead, we offer both

31/2- and 51/4-inch diskette formats.
For new applications, Paradox 2.0 is also a more powerful tool, with 48 new Paradox Application Language commands and functions, sample programs, a data entry toolkit and other helps—many to speed multiuser application development.

Eyewitness report

Study these current events and it's not surprising that American Airlines, Mass Mutual, American Savings & Loan and hundreds of other top companies are standardizing on Paradox. Not for one reason, but for many.

To get the firsthand story, call 1-800-47700, Department 254. Just ask for information and the location of your nearest Ansa dealer, who can give you a free Paradox 2.0 demonstration diskette. In the U.K., call 01-580-4766.



Unlock your desktop with Publisher's Paintbrush."

System 2, 191 Finally, a paint package designed for desktop publishing! When you create or scan a 300 dpi page, you'll get a 64-screen computer image. That's why Publisher's Paintbrush lets you zoom out and work on the big picture. So you get ultra-sharp resolution without ultra-tedious labor.









New typography frontiers: continuously adjustable point sizes, text slope, line and character spacing, extended and condensed type, and letter slant,









Publisher's Paintbrush adapts to most scanners with absolute simplicity. Scan in existing art, logos and diagrams to save many hours of work!











Publisher's Paintbrush is a quantum leap in power beyond our top-selling PC Paintbrush*. In fact, it's the dawn of a new era for desktop publishing. With it, you can produce pictures of super-high resolution (many times-sharper than your screen!) and marry them into text pages. With it, you can take full advantage of desktop publishing packages, laser printers and image scanners. Without it, you're stuck with ragged edges and tedious multi-screen editing.

Publisher's Paintbrush supports major-brand image scanners and hundreds of printers and video display boards. And most desktop publishing packages have built-in links to Publisher's Paintbrush.

Say goodbye to the old boundaries. Say "Show me" to your ZSOFT dealer. Or call our corporate offices for more information.

eus.	ja cel test al.40h	:uee, then not F3-F10 thigh bit eet (F11 or F12)?	1	je exi3 mov ex.locptr	type, then Igsore keypress iget current etack index lasvance one command
wy:	je fixeyi mub el.64	inigh bit eet (FII of FIX)* ino, then branch indiust extended code		inc ax	per current steek inter
egi i		Indicat extended code			tateb atomic ti, secessiti
	mov olvil	normalise extended code convert byte to word smultiply by 32	fol:	mor locptr.ea	rest MCPTS
	and sa, offeat ftext	:celouletr etring address		deo scount jee dez	idecrement base sero pointer
	call write_command omp_e1,250	costput commund		call clear line jmp patkey mor cl.?	idecrement base zero pointer threath if not at bead of stock tolear command line treture to input loop toaloulete address of command
	je enter jen getkeu	iges, then send entry to DOS preturn to input loop	6921	mov el ₁ ?	return to input 1009 (calculate address of command
			1	shi ax,cl	
See of Fi	or F2 (or either of the two al	lifted) was present.	ex13:	cell write_command jep getkey	coutput the command etring
et e	cep al.09	:F17	Input	jap gatkey endp	
		protete foreground soler forward	1		
	ino foreground omp foreground.18h jne clear mov foreground,8	wrap around If necessary	:PRINT STRIP :Entry: DE:	C writee on ARCII etring to ti SI - etring address - number of characters	he command line.
wit.		:jump to olenr ecreen routine	1		
	omp al.84 jee ex3 dec foreground		berne attitle	groc mear Jens pe exit mov sh.2 lodeb mov di.al	jesit if no characters
	dec foreground. omp foreground.#FFh ine olear	referement foreground color prop around if necessary	pate	mov ah.2 lodeb	1005 function 2 - output char iget a byte itransfer it to DL joutput character iloop until done
	ine clear mor foreground, dFn			mor di,al	stranefer it to DL
	leb clear			int 21h loop pel ret	Hoop until done
m3:		SFR Regt	ps_exit: print_etring	ret endp	
	Inc background	rotate background color forward			
	ine clear	Prome it merenary	MRITE_COMPL	MD outpute a command string.	
	cmy al.50 jne ed. int background omp background.0 jne clear mov background.0 jmp clear ome al.50		Entry: AX	- etring offert address	Exit: AL - character after string
m4:		:8h1f4-F24	write_commun	d proc mear	
	der beckground omp blokground, 8FFh	ideorement background color imme eround if necessary			
	jne oleer new background,?	(wrep erouse it necessity		pop en	imaye DS and S1
·lase:	now background,?	colear errors and home cureer	1	pop en push de push ei push ce	(point DS to etring segment
	mov [e1],05000	selear input buffer		pop de mov el.ax	point \$1 to the etring
					iget etring length
	ther Rome or End was prevent.			may bute par emi(di-1).ci	
1001	omp al.71 ine ex#	(Home?	writeli	ine et mov ab.2	intore etring length indvence SI to etring tex. iprint one character
	owil home mov bufferotr.i	those the cureor		mov ab.2 mov di.[e:] int 31h	.prant one contacter
		(reset pointers	1		stransfer character to bulter
				ieo bufferptr	indvence pointer
***	jmp getkey omp at.70 ine ex?	:End?			
	jne ex7	prove cursor to end-of-line		pop di pop de	restore registers
	jmp getkey	Cursor to ess-or-line			
See if oit	ther the left or right-error to	ny was present.	write_comman	o etop	
**	1 TO	(Diesor-left?	BACKSPACE (bletce the character left of I	the cureor
	jee est				
	imp getkey	move left one space	Lacuepace	proc near cmp bufferptr.i	jat beginning of command line?
me#:	jme ext cell move_left imp getkey cmp al.77 jme ext	;Cursor-Right?		je be exit mov ol.(e); sub ol.bufferptr	iges, then ignore it iget count controlled distance to enl-of-il
	onli move_right imp_getken	imove right one space		mub ol,bufferpar	calculate distance to enl-of-11
	jap getkey her ISS or DEL was proceed.			ine of ser ch, ch	
				push ox jexe bel	prench if at end-of-line
re0:	cep al.82	11857	Smith all o	haracters right of the ourser	
	ine exit For insert_flag.1	Itoggle Insert flag			
1810:	jap getkey omp al.83	ther.		push el	peave 01 and DI
	jne exil coli delete	idelete character at oursor		mov #1.dl	(poeltion them for shifts
	Jep patkey	TOTAL CONTROL AT OUR OF		rep moveb	:ehift characters right of cure
Output the	lest command in the stock if	Cureot-Up was present.		pop el	I bearing andresses
exil:	pen at 72	1007	Display the	new etring and update input y	parameters.
	jae exi2	int were their of eracky	bel:	mall more left	record cureor left
	Je up_exit mov ax, leeptr	sure, then Ignore Ampress spet current eteck Index	ba2:	hob ux	pretrieve shift count
		:get current stack index :move back one command		prop ex prosh de queh el	partiave shift count party cursor position party 61
	oup ax dffffh	prove back one command prop around if noccessing		mov el.di onli print etring mov ab.2	ipoint 61 to new part of string ignint the new part iblenk the last character
101	mov ax, 14 mov fx, ax mov e1, 7			nov ah,2	thierd the last character
611	nov ex.as	postquiate address of command		mov d1.32 Int 21h	
	ahi ax.ci			pro di	prestore registere
	push el	transfer address to SI		mov ah.2 Int 18h	treature oursor address
	mov si,cm omp byte ptr car[ai],0 pop al je up_exit mov looptr.dx				:decrement character count
	pop al	irestore 61	be exit:	ret	
	nov looptr.dx	inc, than ignore keypress iset LOCPER	1		
	call write command		PRINTCHAS .	rites a new character to the	legut buffer and schoes It.
p_ex11:			printchar		
Output the	next command in the eteck if	Cureor-Sown was greened.		omp insert_flag.# jne print3	lineers exace on?
x12:		(fown?		Jne print3	type, then branch
	jne exi3 emp ecount.#	int head of comment stack?			(DOSKEY ASA: continu

Print a char	racter in overstrike modr.			je rti	igen, then branch increment column number
	mov el.[el] cmp el.befferptr	iges cours		ino di jep rii	
	cmp ol.bufferptr	pend-of-line? ino, then branch	PULL	107 61,61	(Regimning of neet line
	mov cl.(wi-1) mov cl.(wi-1) mub cl.(mi)	:prt maximum length	PLR:		sposition ourser
	sub ci,[si]			100 100	:advance pointere
	omp cl.1 jn beep	isubtruct current length ibuffer [wil7] lyme, them branch lincrement count ideposit new churecter ithen print it			erre potentere
rintt:	inc byte ptr [si]	lingrement count	Pt3:	ret	
Total Control	See file you	ithen print it	7		
			1979P valors	ites the cursor to the begin	tales of the commed lies
	int 2th inc bufferptr	sedvanos buffer pointer			entry of the comment life:
1001	ret mov as exerci-	sprint ASCAL 7 thru 6006	home	proc near mov ol,bufferptr	
ep:	Int 186	ipriet Ascil / thru elle		sec cl sor ch,ch	iget position pointer icalculate distance from stert
	rot			Jore home_exit	jexit if already there
YIRE & char	ranter in Insert mode.		honel:		leave count
10121		iget maximum langth		call move_left	per left one epoce pretrieve count
inter	mov ci.[e1-1] sub ci.[e1] cep ci.i	: subtract current count		pop ex loop honel	licop until done
	cep ci,i Je boce	buffer full? ues, then branch	home_exit:	ret endp	
	mov ci.(si) emp ci.buffergtr		1		
		iend-of-line?	Total advance	se the current to the end of	the second like
		iges, then branch indiculate number of shifts			un versité lité:
			eoi	proc near	
	sor ch, ch push cx push ei	seare shift count		mov ol.[s1]	iget count intreed; at end? tyre, then exit insigulate distance from and
	push el edi di.cx	mayer 51		omp oi.bufferpir jb mod exit sub oi.bufferpir	ture, then exit
		ieare shift count imave SI iposition DI to end-of-line iposition SI just before it			
			I		byte to word in CX
	eld rep moveb old	:est DF for now :make room for new character :clear DF	eoili	push de cell move_right	legvance right CI times
	oid	;clear EF			
	pop el mov esi(di), al mov ah.3	irestore SI ideposit new character	est_exit:	icop eol1	
	mov at,3	iget ourser position	eol .	endp	
	Jet 18h	training shift count	1:		
	pop ox ino ex	iretrieve shift count linoroment it leave oursor position	CLEAR LINE	Oleans the command line.	
	puels dix puels el	leave oursor position	clear line		***************************************
		issve 61 ipoint 61 to ourrent location	Crear_time	proc near mov ol.(el)	;get oount
	call print_string	print new part of string prestore \$1 and DX		For ob.ob	perit if no characters
	pop el pop de mov ah,2			push ox call home	home the cureor
	mov ah,2	reset cursor position		call home	incre the cureor iget cursor position
	iso bute pir [sil]	sedd to obsrecter count		mov ah,3 int 10h	
gintchar		imove ourser right			restore CI
GIUCCERL	endp		1	push dx mov sh, 2 mov 61, 32	print ASCII spaces
	tes the character at the		ottrett	mov 61,32	
*******		nursor.	0118811	Icon cline!	
inte te	proc sear			pop dx	thome cursor again
	mov ol.[si] csp ol.bufferptr	iget count pand-of-line?			
	jb del2 sub cl.bufferptr	tyee. then ignore keyprese		mov byte ptr [si],0	reset parameters
		ined-of-line? ives, then ignore keuprese iosicolate number of shifts rhyte to wise in CE isaws shift count	1	mov byte ptr [si],0 mov bufferptr,1 mov dl,ei	
	push cx joxx dell	prench if no shifts	olineRt		
	push si	ieave 51 and Di	oline2: olear_line	ret endp	
	push si gush di mov si di	receives recisters for shift	1		
			ICLAN SCRE	EN clears the display to th	e currently eslected colors.
	rep moveb	jekift characters right of cursor prestors registers	olear scree		
			oleur_ecree	s proc near outh da	ceave 06
1111	pop el mov ab, 3 int 10h	;get cursor position		proc near push de mov ex.bloe_drts mov de.ex assume de:blos_date	reave DS to \$108 Data Area
	Int 1eh	cexit through BACKSPACE routing		nov de ex	
121		Become new rooting			jest number of columns
iete	endp			mov (h. 26	iest number of soress rows
				mov (h,20 omp ega fiap,0 je cleafi	ino, then branch
MOVE_LEFT m	oves the cursor one chare	rier left.			ile the SGA the solive monitor?
ove_left	proc near			jns cissfi mov dh.ort rows mov bh.banügroued mov ci.4	ino, then branch ipot number of eoreen rows iformulate attribute for eleer
	emp buffergtr.1	ist beginning of line?	olesfit	nov to tackground	(formulate attribute for clear
	je left3 mov ah,3 int 10h	type, then ignore keypress		mov ol. 4 shi bh.ol	
		London RT		or bh, foreground	
	or dl.dl	use, they branch		nov ax, events	:video function - scroll moreen
	or dl.dl je leftl dmo dl jap left2 mov dl.columne dec dh	iges, then branch ideorement column number	1	nor ox.ex int 10h mov ah.15 int 10h mov ah.2	idealgrate entire soreen joieer the display idetermine active video page
efet.	pep teft2	inculties at end of previous line	1	mov ah, 15	(estermine active video page
	dec dh	.,		nov ah, 2	those the cursor
eft2:	mov ah.2	iset new position		nor dr.dx	
		:decrement pointers	1	pop dr essume dernothing	:restore DS
er:3:	dec bufferptr			seeume dernothing	
eft3: ove_left	ret		clear_scree	ret n etip	
	*****		1		
	noves the cursor one char	anne steht	This ert	coment for lat 18 is '	ied only on machines that use it.
		more repris			
	proc rear	cent count	int_te	proc far me celocde, dainothing, sa	
			2000		
MOVE_RIGHT NOVE_Fight	cmp ol.bufferpir			pushf	
		iget count rend-of-lise? Type, then ignore keyprose rget courser position		pushf asi	converted the Cings (DOSKEY ASM contin

ACCOUNTING SOFTWARE YOU'LL NEVER OUTGROW.

A breaktbrough in micro software power and flexibility means never baving to replace your business accounting software again!

e'd like to introduce you to micro software that will never become obsolete – Macola Financial Software.

Get All the Power You'll Ever Need—Once and for All! Macola Financial Software is adapted from minicomputer programs proven through a decade of successful applications.

It <u>literally</u> unleashes the power of a minicomputer for micro applications. That's the kind of power that <u>encourages</u> unlimited business growth.

13 Different Program Modules. Macola Financial Software offers up to 13 different modules that provide these vital operational functions:

Accounting—General Ledger - Accounts Receivable - Accounts Payable - Payroli -Fixed Assets/Depreciation

Fixed Assets/Depreciation

Distribution—Inventory Management –
Customer Order Processing – Purchase

Order and Receiving

Manufacturing—Bili of Material Processor

- Material Requirements Planning* - Master
Scheduling* - Job Costing*

Plus there's a Report Writer that permits customized reporting and has the ability to transport data files to popular spread sheet, word processing, and data base programs.

Total Integration or Departmental Solutions—Your Choicei Macola Financial Software is an integrated business solution for growth-oriented companies. You can begin with a single, stand-alone program and build an integrated system over time.

And when your business gains Fortune 1000 status, you can implement departmental computing with communications linked back to a mainframe.

*Under development, to be released



Proven Network Compatibility, Without question, this is the most advanced software compatible for Local Area Network (LAN) environments. Macola Financial Software has four years of actual field experience in LAN applications and aiready represents four generations of enhancements. No other micro software can say the same.

It's easy to upgrade Macola Financial Software from a single- to multi-user system, requiring no change in program or data files. All of which means that, when your business is ready to move into LANs, your software will be ready, too.

Speed and Data Integrity. Macola Financial Software is written in Micro Focus COBOL for maximum speed and data integrity (source code available). Micro Focus features an efficient dual file structure that provides assurance against accidental loss of data.

Software Constantly Updated. The only "certainty" in computer software is that this morning's innovation will be replaced by this afternoon's. How do <u>you</u> protect against that?

With Macola Financial Software. It's constantly being enhanced, with new features that are designed specifically to soive actual field problems.

That's why it's software that is literally impossible to outgrow—because it never stops growing.

CIRCLE 263 ON READER SERVICE CARD

Comprehensive Support. When you proceive easy-to-understand documentation. Comprehensive technical support is available direct from Macola's vast allol-free 800 line or through Macola's nationwide network of authorized reseliers who provide local training and hands-on support.

Your support options also include source code modifications. We're your technical partner for

We're your technical partner for the life of your system. And that's a long, long time.

By the Way, Who IS Macola? We've been helping businesses find computing solutions since 1971. And we were one of the first companies to successfully introduce business application micro software specially programmed for LAN environments.

When you're investigating business accounting software, remember that now there is a standard for long-term value and performance. And "Bunning is believing." For more information, or to order "live" demonstration programs:

Call I-800-468-0834 (Ohlo) I-800-468-0833

M/A/C/O/L/A FINANCIAL SOFTWARE

Because growing companies need powerful accounting.

See just how much this software can do – for

Please rush me your FREE brochure describing all the capabilities of Macole Financial Software.	a
NAME	_
COMPLNY	_
ADDRESS	_
CITYSTATE	
ZIPPHONE	
Check one: Dealer End User	
Mail to: Macola, Inc. P.O. Box 485	

(614) 382-5999

	cep sh.2	raffecte only fn 0,1	mov eldlib,by
	jb blom 1		mov old2ib(2).es
blos #:			mov ah, 25h
		restore flege	ies dr.domint
	389 e18 1st 18	toonstane on	int 2th
blos 1:			
-	or ab,18h	;make extended fn	Determine If BIOS supports enhanced keys.
	call old int 16	roell old handler	NOT ON OR
		ilf low bute ien't EP	mor bute ptr on:[417h].esh
	ine bloe 2		
			one el-bute etr en:[417h]
	ie blos 2		
	mor al.el		sor bute ptr euri 417h], edh
blos 2:			
	popf		
	ret 2	idicoard original once	omp el, bute ptr en (417h)
18t 16			
			mov ex.3516b
			mor word atr old int 16,bx
			mor sh.200
			mor for offeet int 16
			int 21b
Determine e	bether an NGA le imetalle	ed.	so_support:
	mov sh.12h	(R108 video function 12h	[Terminate but leave Interrupt handling code and buffer space resigent.
	moy bi.10h		
		joet info	
			int 275 terminate-byt-stay-resident
		;uee, then there's no SGA here	
	inc een flee	ino, then there is an EGA	
Bave and re	place interrupt vectors.		eed begin
1			
ialti	nov ex 5651h	come and replace but 2th vector	
14111	mov ax,3821h	;save and replace int 21b vector	(DOSKEY ASM end

REM -	- PASIC I	MARDORA	TO CESS	ATM DOS	KEY.COM					600 DATA	0.	4.	0.	4.	٠.	٠.	٠.	٠.	
	DOSKEY .		#1 1836	- 1						ODD DATA				4.	197		112	32.	**
# PIRLD	#1.1 AS	44								TOS DATA	7:	08.	67.	60.	107.	117.	112.	32.	**
	= 1 70	246								720 DATA				- 60		- 61		ě:	
0 11	NESCH - 1									730 DATA									
	BJ - 1 1									740 DATA		114.	161.	116,	116.	111.		161.	76
	READ BY									700 DATA	32.	*			4:		- 1:	*:	3
	CHECKSUN	4 - CHE	CESTAR +	BELK						778 DATA	8.	- 21	8:	- 2:	- 61	::	- 21	4:	
·	IF (BYT)	285	THEN!	LEST AS	· CYRA	(STYR)				700 DATA	6.	4.	0.	4.		6.	6.	6.	
	FUT #1					,,				TOD DATA	251.	120.	262.	10.	110.	6.	40.	258.	100
O XX	XT J									600 DATA	40.	130.	2.	40.	151.	42.		1.	46
e ne	AD LINEUT	ence .								GLO DATA		95.	165.	40.	140.	160	60.	1.	42
S MEYT		a or	INDOOR .	TREE PRO	INT -KF	ror in	7196-136	0 + 10		#30 DATA	45.	198.	4.	20.	126.	198.	128.	6.	74
O CLOCK										040 DATA	220.	240	94.		63.	140.	210.	40	114
B IF CH	ROXFUM -	133451	THEN 2	BINT "F	uccesef	of Comp	letion!"	1 190		650 DATA		30.		1.		117.	207	60.	85
	*DOM f1									OCO DATA	62.	61,	02.		97.	30,		62,	63
B DATA	235.	103	104	110	111.	112.	121,	114.	776 622	670 DATA	232.	107	192	110.	130.	242.	136.	66.	101
6 DATA	105,	103,	104,	100.	32,	102.	45.	66.	598	GGG DATA	40.	136	42.	59.	1.	177.	14.	211	70
M DATA	97.	116.	105.	115.	32.	60.	117.	98	762	GPG DATA	231	126.	166	0.	7.	130.	200.	284	110
# DAYA	100	105	116		105	110.	103.	32.	782	G10 DATA	163.	50.	237.	252.	243.	164.	40.	255.	144
Ø DATA	67.	111.	40.	74.	101,	102.	102.	32,	635	GZG DATA	0.	56.	1,	40.	131.	62,	80.	1,	31
6 DATA	80.	114.	111.	115.	105,	110.	101,	57.	600	630 DATA	15.	117.	7.	40.	190.	٠.	50.	1.	45
6 DATA	76.	62.	13,	0.		0.	0.		172	GAG DATA	61.		40.	161,	ne.	53.	40.	163,	37
TATA	4:	100	105.	114	52.			2	350	GOO DATA	130.	242	131	100.	2.	191.	88	- 1	81
E DATA	4.						0.		9	679 DATA	185.	4.	6.	172.	36.	223.	174.	117.	61
@ DATA				e.		0.		0.		GEG DATA	12.		240.	232.	110.	3.	131 .	230.	124
O DATA	e.	0.	0,	e,	6,	٠,	0.			GGG DATA	5.	190.	.44	0.	15.	7.	31.	95.	30
ATAG BI	0.	110.	121.	112.	101.	32	0.		107	1000 DATA	295	10.	254	204	40.	138.	100.	15.	95
DATA	0.			6:	8:	4:		- 1		1929 DATA	1.	36.	7,	139.	250.	151.	196.	2.	75
DATA	9:					- 1	4:	7:		1838 DATA	139.	242	78.	100	4.		40.	100	
O DATA	0.	60.	111.	112.	121.	32,			400	1040 DATA		71,	1,	1,	252,	100,	11,	205,	72
ATAG BY		0.		٠,			e.	٠.		1050 DATA	33,	10.	162,	117.	4,	205,	40.	235.	63
ATAC DE	0.	0.		- 61	0.			*	:	1800 DATA	244.	100.		285.	33.	272.	162.	110.	22
DATA	4:	100	101	100	32.	- 21	- 1		245	1000 DATA	238	227.		27.	117.	10.	232.	246	110
G DATA		0.	0.		0.			0.		1666 DATA	2.	40.	161.			46.	103.	01.	63
DATA		0.	0.	9.	ø.		e.	9.		1100 DATA	1.	40.	100.		65.	1.		235.	84
DATA D		0,			0.			0.		1110 DATA	204.	50.	15.	110.	٠.	252.	207.	1.	
ATA B	6.0	60.	104.	100.	166.	114.	52.	8	504	1120 DATA	238,	196,	232,	108.	13.	256	33.	105.	116
DATA		2.	0.		2.		0.	8:	:	1146 DATA	199.	100.	245	33.	20.	133.	110.	105.	71
DATA	4:	- 2:		- 1		- 11	- 81	8.		1100 DATA	60.	124	116	9.	***	01.	114.	26	- 60
DATA S		112.	67.		164.	32.	0.	0.	400	1100 DATA		66.	110.	20.	160.	120.	110.	2.	- 64
P DATA			0.		0.					1176 DATA	44.	04.	44.	61.	152,	177.	0.	211,	71
B DATA		0.	0.		0.		٠.	0.		1106 DATA	224.		72.		232.	87,	1,	ee.	
DATA	4.	0.	114			110	101	32.	6 6	1100 DATA	255.	110.	264.	235.	130.	**	66.	117,	111
DATA DE	7.	08.	114.	111.	116.	110.	101.	9.	DAL	1210 DATA	82.	00.	1.	10.	117.	44.	44.	100	64
# DATA	4.			- 21	8.	- 1		9.	- 1	THIS SAIN	***			101	****	***		100,	
DATA	0.	0.	0.		0.														
DATA		01,	100.	215.				0.	599										
	0.				9.	6.													

Three-year warranty.

Once again. CORE leads the hard disk drive industry by setting new standards for value. Combining speed, capacity, reliability and cost, our products offer exceptional value.

We're so certain about the quality of our high performance 5.25" drives that we now back them with a full three-year replacement warranty. In addition, optional on-site or local service is available for your entire system from CORE and other maintenance companies.

Designed for personal computers such as IBM PC-XT, PC-AT and compatibles, CORE's HC Series and ATplus drives are guaranteed superior. No expensive service calls. No lost productivity. Reliability you can count on.

Also, CORE drives are Novell 286, Xerrix, and SCO compatible.

For more information on CORE products and threeyear warranty, contact us direct.



IMS-286 10 MEGAHERTZ

\$999

Base System

- . Intel 80286 processor running at 10MHz. Dual diskette drive/fixed disk controller switch selectable to 6MHz
- Phoenix BIOS · 512KBRAMexpandable to IMB on system board
- 1.2MB diskette drive

- 10MHz.
- EGA Color System. \$1599 Enhanced graphics adapter video card
- Intel 80286 running at 10MHz
 6 to 10MHz switchable clock speed

· Enhanced, 101-key keyboard

· 200-watt power supply

operations manual

Illustrated installation and

Clock-calendar with battery backup

- . 512KBRAM up to 1MB on motherboard · 1.2MB floppy drive
- Dual floppy/hard disk controller Enhanced, 101-key keyboard
 Clock/calendar with battery back-up

· 200 watt power supply

EGA Color System. \$2199 . EGA color system featured above, plus

- · SpeedStor partitioning software EGA Color System. \$2499
- EGA color system featured above, plus:
 70MB fast access (28ms) MiniScribe hard d · SpeedStorpartitioningsoftware

MonoGraphic System. \$1199

- · High resolution monochrome graphics adapter card
- Intel 80286 running at IOMHz
 6 to IOMHz switchable clock speed
 - Phoenix BIOS . 512KBRAM up to 1MB on motherboard
- 1.2MBfloppy drive
 Dual floppy/hard disk controller
- Enhanced, 101-key keyboard
 Clock/calendar with battery back-up
- · 200 watt power supply

- MonoGraphic System. \$1799 . 10MHz monographic system featured above, plus:
- SpeedStor partitioning software

- MonoGraphic System. \$2099 10MHz monographic system featured above, plus:
 70MB (ast access (28ms) MiniScribe hard disk
- SpeedStor partitioning software

Memory and Math Coprocessors

120ns 256K Chips, nine chips per set...\$35 Intel 80287-8 math coprocessor. \$269

Floppy Drive 360KB or 1.2MB diskette drive to enhance vourIMS-286

MAKE \$99 1.2MB., \$109

AT I/O Board

Communications support: one serial and one parallel poet...\$69

AT Multifunction Card 0K expandable to 1.5MB, serial port, parallel

port, game port. \$139

External Modem

ito answer, auto dial, auto voice/data switching...\$119 Modem cable...\$9

INTELLIGENT BUYERS shop for superior products and superior value. All of our products come with a one-year warranty, one year of technical phone support, and a 30-day more year of technical phone support, and a 30-day more year of the support of Choice. Criosce. Texas resulents please add 7% % sales tax

IMS-88 10 MEGAHERTZ

NOW, INTELLIGENT MIRCO SYSTEMS OFFERS NEW, LOWER PRICES ON ALL OF OUR COMPLETE COMPUTER SYSTEMS.

\$489

Base System

- · Intel 8088-1 processor running at 10MHz, · Floppy disk controller selectable to 4.77MHz
- · 640KBRAM 360KB diskette drive
- AT-stylekeyboard
- 150-watt power supply
- · Illustrated installation and

10MHz. MonoGraphic System. \$699

- · High resolution monochrome graphics ad · 12" high-resolution, flat screen display
- · Intel 8088-1 processor running at 10MHz 4.77 to 10MHz switchable clock speed
- · 640KBRAM 360KB floppy drive
- Floppy disk controller
 AT-style keyboard

MonoGraphic System. \$989

 Same monographic system featured above, plus
 Reliable 20MB MiniScribe hard disk system with Western Digital controller

10MHz, 30MB MonoGraphic System. \$1039

- Same monographic system featured above, plus
 Reliable 30MB MiniScribe hard disk system with
- Western Divital RLL controller

EGA Color System. \$1099

- Enhanced graphics adapter video card
 14" high-resolution, EGA color monitor Intel 8088-1 processor running at 10MHz
- 4.77 to 10MHz switchable clock speed 640KBRAM
- 360KBiloppy drive
- Floppy disk controller AT-style keyboard · 150-watt power supply

EGA Color System. \$1389

 Same EGA color system featured above, plus: · Reliable 20MB MiniScribe hard disk system with Western Digital controller

10MHz, 30MB EGA Color System. \$1439

. Same EGA color system featured above, plus: Reliable 30MB MiniScribe hard disk system with Western Digital RLL controller

1200 Baud Internal Modem

1200 Baud internal modern for munications support...

Floppy Drive 360KB floppy drive to enhance you IMS-88...599

PC I/O Board Clock/Calender, serial port, parallel port, game port...\$69

PC Multifunction Board 384KB RAM, serial port, parallel port, game port, and clock/calendar with battery back-up., \$125

576KB Expansion Board Expandable to 192KB, 384KB, or 576KB with 64KB or 256KB chips. Comes with 0KB...\$39

To Order Call Toll Free: 800-247-3084

In Texas Call: 512-250-8271 For Technical Support 512-250-8794



"Mace Utilities 4.0 Best Data Recovery There is Gets Better"

PC Magazine March 31, 1987

And Better!

VERSION

4.10

RECOVERY FEATURES

DIAGNOSE checks any disk for errors.

REMEDY fixes errors, automatically.
UNDELETE recovers deleted files easily,

automatically.

UnFORMAT recovers from an accidental format of your hard disk even when MACE was not installed.

new Floppy UnFORMAT recovers from accidental format of a floppy disk.

new FORMAT-F floppy formatter. Replaces DOS FORMAT. Includes "RESURRECT" option, to revitalize weary disks.

FORMAT-H hard disk formatter replaces DOS FORMAT. Guaranteed safe.

To Order Call 800-523-0258

IND SCOTTIRES

Fast UnFRAGMENT quickly reorganizes segmented files for speedier

disk performance.

VCACHE buffers data reads and writes in regular, expanded or extended memory for dramatic disk

extended memory for dramatic disk speedup. **SORTD** Directory sort.

SQZD Directory path optimizer.

VSCREEN Screen speedup.

VKETTE Diskette caching for floppies.

~e^N dbFIX

Repairs and recovers damaged or lost DBase files, automatically.

Advanced performance at the same good price: \$99

Paul Mace S O F T W A R E

(DOSKEY BAS ends)

only trickery involved is in understanding some of function 0Ah's subdeites. Brist byte in the function 0Ab buffer is set by the calling program to the maximum number of characters to be accepted, including the terminating carriage return. The second byte is filled in by the input routine and indicates the number actually entered, excluding the carriage return. Following that is the buffer space itself, where the ext is denosited.

Most memory-resident utilities use the BIOS to read keystrhes and write to the screen. The BIOS routines are convenient and fast, and the DOS routines may not be available. But DOSKEY's replacement of incincion that huses the slower DOS the continuous properties of the screen. This restriction must be imposed to ensure that redirection of standard input will function on the DOS level. It is also nocessary to generate an interrupt 23h properly when the Ctrl-Break key combination is typed.

To maintain compatibility further, DOSKEY minis. DOS by repared by sating interrupt 28th while awaiting a key-stoke on the command line. This interrupt 28th while awaiting a key-stoke on the command line. This intervolve the state of the size of

The input loop is only ended when Enter or Esc is pressed. Hitting the Enter key puts an ASCII 13 immediately after the last character. DOSKEY handles Esc in a slightly different way, clearing the buffer and the command line but continuing to solicit input without ever handing control back to DOS.

One final consideration in implementing the custom 0Ah handler is to restrict activating it to when the function 0Ah request comes from DOS. A few other applications, notably DEBUG and certain utilties, use it just as COMMAND. COM does. The very first time DOSKEY intercepts a call, it assumes the caller is DOS and fingerprints it by saving the value of the DS register. Then it can determine whether subsequent calls came from DOS simply by looking at the segment address of the caller's reserved buffer.

The method ian't foolproot, of course, You could fool DOSKEV into working only in DEBUG by loading it and immediated) invoking DEBUG, if both were done from inside an AUTOEXEC file. That way, since DOSKEY would see DE-BUG's function OAh call before it saw the DOS command line, it would it hat DOS-KEY is DOS. Indeed, you could even take advantage of this fact to customize a copy of DOSKEY that would assign DEBUG commands to the function keys, then enhance DEBUG with DOSKEY by following the scenario outlined above. DEBUG

DOSKEY AT A GLANCE

DOSKEY is a memory-resident utility that extends the functions available at the DOS prompt to include changing foreground/background colors, a command stack that holds up to 15 immediately reissuable commands, and command macrox keyed to function keys Fabruagh F12. In addition, editing functioning the function for the function function function for function
DOSKEY is normally loaded through a line in your AUTOEXEC .BAT file but may be loaded if you wish from the command line using the following syntax:

[d:][path]DOSKEY

Operation: After loading, pressing the Fl key successively eyeles through Fl key successively eyeles through the 16 foreground (text) colors, while F2 acts similarly for the eight available background colors. Pressing the Shift key with either F1 or F2 reverses the direction of the cycling. CLS trembet the last-set color scheme. If a space is typed between CLS and Enter, the color will revert to the DOS defaults (black and white).

Function keys F3 through F12 are

assigned by default to the following command macros:

- F3 dir F4 type
- F4 type F5 copy
- F6 delete F7 chdir
- F8 path F9 brow
- F9 browse F10 cls
- FII backup
- F12 restore

 Any of these assignments may be

changed using DEBUG, as described in the body of the article. The browse command (F9) was presented in PC Magazine, Volume 5 Number 6. Use of the F11 and F12 keys requires an enhanced keyboard and appropriate BIOS

support. The command stack uses the Up and Down Arrow keys to bring previously issued commands to the command line for reissue. The command line office supports Left and Right Arrow cursor motion without deletion, Home and End keys for moving to the ends of the line, and Del and Backspase for characteristic of the command of the line, and Del and Backspase for characteristic of the line, and Del and Backspase for the decident of the line, and pressing Ese cleans the command of the line, and pressing the citizen to the line, and pressing the line, and the line line, and line, an

I inside the buffer reflecting the command length. The difference is that it gives us more ways to create that entry.

NNUT itself does nothing more than call expresses from the standard input device and act on those it recognizes. The GETKEY loop uses DOS function 60th to determine whether a character is waiting to be read. When one is, it's read through DOS function 8; when one is not, interrupt 28th is executed and the status is checked again, tooping endlessly until a character appears. When the edvice is the keyboard, pressing a key presents a character to function 08th.

Extended codes (i.e., keyodes which are reported in the from of two bytes rather than one) are handled slightly differently by function 8 than by interrupt 16h. When input is to be read solety from the keyboard, interrupt 16h is the preferrent board, interrupt 16h is the preferrent board, in the board in the holds of the holds o

The remainder of the INPUT routine is eslet-explanatory. After retrieving a key-code, INPUT compares it sequentially against all those its supports. A match results in the execution of a corresponding portion of code, while a failure to match causes the keypress to be ignored. Routine of the causes the keypress to be ignored. Routine SPACE and PRINTCHARA are involved to rule out the character left of the cursor or to rot and bottle for character and character. A quick scan of the . ASM listing will reveal the mechanics of the process.

THE COMMAND STACK. Every time DOS to DOSKEY interseps a call from DOS to function (Ah, h invokes its own INPAT) routines to read a command. But before returning control to DOS, DOSKEY copies the new entry from the DOS buffer to a docation set aside within its own data area. That location is the command sack, DOS-KEY maintains a 1920-byte area just beyond its own code that has some for both STAC buffer of the DOS with the DOS with the DOS with the DOS can hadde (12) 128-byte entries. Each stor can hold the longest command DOS can handle (12)

would suddenly become easier than ever to use, complete with command-line editing capabilities, a command stack, color, and macros.

THE NPUT ROUTINE When DOS-KEY is loaded, it saves the original inserrupt 21h vector and points it to its own DOSINT routine. All subsequent calls to the interrupt-requesting DOS services thereafter go to DOSKEY. The DOSINT routine first looks to see if function OAh is requested. If not, execution jumps to the previous interrupt 21h handler. If function OAh was requested, DOSKEY checks the DS register to see if the call came from

COMMAND.COM. Calls from other sources are routed right back to the original interrupt code. The procedure labeled INPUT in the

source code is DOSKEY's functional but enhanced equivalent of DOS's function OAh. INPUT is the hear of DOSKEY. It accepts input from the command line just like DOS but adds a variety of new features.

To the calling application (in this case COMMAND.COM), INPUT's handling of function OAh is transparent. It takes control with an empty buffer addressed by DS:DX and terminates with the entry copied to the buffer and the count byte at offset

Accounting at its Best!

Professional Accounting Systems FOR PC-005% & MS-005%



ACT 1

is the new INDUSTRY STANDARD

with which all accounting software must be compared with relative to these points: VALUE, FLEXIBILITY, POWER, SECURITY, PERFORMANCE, INTEGRITY, EXPANDABILITY, HONESTY and PRICE

COMPARE AND SAVE

\$99.50 + Shipping & Handling



PARTIAL LIST OF FEATURES:

GENERAL FEATURES Manu drivon with 2 help references Multi company and report generator

User can easily install in minutes Sample date files included Complete audit that All modules can post to multiple profit centers.

Fully integrated with single source entry Once sensitive user-defined facial calendar-User defined financial reports User can categorize Accounts Receivable, Vendors, Payroll

& Inventory by user datined typs: User can design checks, invoices, statements and W-2s User defined chart of accounts, account numbers and stock numbers up to 15 alphanumencs.

GENERAL LEGGER

Allows for multi-company ledgers. Unlimited multi-level accounts for departmentalized negoting. Allows dely automatic posting to appropriate accounts. Allows recurring journal entiries.

User can process transactions two penods into next year Unimited number of accounts. Up to 10 year account history

Allows budgeting ACCOUNTS RECEIVABLE

Open invoice and/or belence forward. Allows unapplied payments and multi-company accounts receivable. Handles credit limits, collection status and payment discounts.

Handles recurring accounts receivables. Supports partial asymetric and finance charges. Allows unapplied credit memos. Up to 5 user-defined signing periods. Customized fast on user-designed statements. Making blables and reports with 7 different sorts.

INVENTORY Supports LFQ, RFQ, weighted average or standard cost Supports markets market or last

Supports markup, margin or list.
Allows up to 4 places to right of decimal for units, cost & price.
Supports any unit of measure.

Supports quentity price breeks

350 page referenced documentation included.

UNCONDITIONAL 30 DAY MONEY BACK GUARANTEE

Product must be returned in resaleable condition. Restocking fee applicable.

GUARANTEE applicable on all products bought directly from COUGAR MOUNTAIN SOFTWARE. SITE LICENSES AVAILBLE

ACT 1 series is UPGRADEABLE to ACT 2 series which is multiuser for LANS & Networks. Data files are automatically upgradeable. SALES INVOICING Supports service or product onented bus

Supports service or product onented businesses. User defined our tables, including multiple sales taxes. User defined sales discount tables. Prints packing slips. Prints immediate imposes if needed Alerts user to pusitioner exceeding predictions.

Sales History Reports
Customized tart on user-designed invoices.
Automatic updating of inventory dely
Prints sales purmals
Millows resum credit memos

Interfaces with General Ledger, Accounts Receivable 6 Inventory ACCOUNTS PAYABLE

On post to 200 garerá ledger aspensá accource per invoice. Automatically updates mientory and general ledger delly Automatically prepares paymants. Supports perbal payments and handwritten checks Supports prepad aspenses and future labeluses.

Processes credit and debt memos Computes discounts and records discounts taken PAYROLL

Generates automatic paynoli Automatically poets to General Ledger and Accounts Psystolia Provides up to 15 user-dafined rates

Allows post facto payroll
Allows destribution of payroll expenses to user-defined
departments

Benefits and disductions are calculated on fixed amounts, hourly amounts, percentage of gross or variable. Allows additions to gross which may be teache, nontexable or personly taxed. Handles sock leave and vacations.

All tax tables assly updated by the user. Handles payrol draws, per dem pay, contract and piece work, hourly and salary. Handles by accounting.

Handles 401K & cafatena.

Prints 941As and W-2s
HARDWARE REQUIREMENTS
18M PC-0 or compatible
HARD DISK REQUIRED.

To Order CALL (800) 344-2540 8:00 - 5:00 MST

Monday - Friday

SOOFT WARE.

2609 Kootana, Box 6886, Borse, IO 83707, 208-344-2540

"There was herdly any conteet for the Best Buy of the Year in application software. ACT1 must be judged against others costing more than ten times the price."

Mr. Stan Veit
Editor & Publisher
Computer Shopper Mag.
"We have tried DAC end TAS.TI

"We have tried DAC end TAS. They now collect dust on our shelves because they do not compare to ACT1."

Mr. Tom Atkinson
President

President York X-Rey, Inc. "We have used both BPI and Peachtree. Your ACT 1 and ACT 2 out-

tree. Your ACT 1 end ACT 2 out perform both of them." Mr. Petrick Benjemin Benjes Business Ctr.

I wrongly assumed because of the low price of your program that it should not meet our needs. The variability of this activate is incredible. Its case of use, speed end accuracy is frantastic. The program is bomb-proof and an asset to our business. I believe you have set a reliable standard for others to follow."

Darren G. Stevenson President The Rug Company

Caugar Mountain Software P.O. Box 6886 Bose, Ideho B3707 Please rush me one ACT 1 \$99.50 plus \$11.50 S & H

Total \$11.00
Idaho residents and 5% sales tax
Shoping & Handling Outside USA \$2000

Check Money Order
MesterCard VSA

AMEX (\$1.50 extral
Account #
Expres
Name
Company
St. Address

| Phone _____

Signature_____

characters), plus one byte that indicates the

length of the entry.

A variable called STACKFTR is maintained that points to the next location in the command stack into which a string will be copied. As a new one is inserted, STACKFTR is incremented. And when the last increment causes STACKFTR to exceed the boundaries of the stack, it wraps beck around so that the next common. Thus, the command stack forms acircular queue in which up to 15 DOS commands are stored in their order of entry mandas are stored in their order of entry.

intalkale shortest uncommon of centry, intalkale shortest uncommon second writishe, LOCFTR, les et equal to STACKFTR. LOCFTR LocFTR set, which is the stack. When you press Up Arrow or Down Arrow, LOCFTR is decremented or incremented by one, a new address in the stack is calculated from it, and the text of the common at that address is output. Since DOSKEY less dasked 28 bytes for each entry, formulating the offset of the current command in the control of the current command in LOCFTB by 12 and pipe as multiplying LOCFTB by 12 and 12 an

LA third Yariable, called ZCOUNT, is functionally equivalent to LOCPTR but is different in value. ZCOUNT maintains a record of where we are in the command stack relative to a zero base. Each time LOCPTR is set equal to STACKPTR, ZCOUNT is zeroed, and each press of Upcomment of the Comment o

It usually doesn't take long to stock the stack with the maximum of 15 commands. But until capacity is reached, DOSKEY must prevent attempts to go back beyond the first one. Thus, the first time function 0Ah is called. DOSKEY initializes the command stack by writing a zero to the first byte in each entry. Then, before it replays a command, it checks the first byte. If that byte is zero, the command is invalid and DOSKEY ignores the keystroke. Once the buffer is full, all entries will begin with a legitimate count byte. To make sure this scheme works (and to be efficient), DOSKEY doesn't buffer the null entry you make when you press Enter

without typing a command beforehand.

In order to output a command from the

stack, DOSKEY calls the subroutine WRITE_COMMAND. WRITE_COMMAND takes as input the offset address of the string to be sent, and it assumes that the first byte of the string will define its length. This is convenient, as the input buffer holds text in the same format. The string is

■ The command stack wraps back around and forms a circular queue in which up to 15 DOS commands are stored in their order of entry.

then copied to the buffer and echoed to the display. Before it gets written to the screen, the routine CLEAR_LINE is called to clear the former contents of the command line.

FIXING CLS Immediately after it transfers a new entry to the stack, DOSKEY checks to see if the command was CLS. If it was, the text of the command is eliminated in the DOS buffer so that DOS never knows it was entered. DOSKEY places a zero in the byte that holds the count of characters entered and overwrites the first character of the CLS string with a carriage return. Thus, DOS thinks you simple return. Thus, DOS thinks you simple pressed Enter without typing a command.

DOSKEY then clears the screen itself. The reason is twofold. First, if DOS does the clearing, it will revert to black and white. Second, DOS will clear only 25 rows no matter how many are actually displayed.

DOS calls interrupt 10h, function 6, to blank the screen. Function 6 requires that the caller explicitly define the region to be cleared with the CX and DX registers. To determine the number of columns displayed (usually 40 or 80), DOS correctly pulls the value from a byte in the BIOS data area. But it automatically assumes

there are 25 rows. That's why only a portion of your screen is cleared and the rest is left untouched when you're working with more than 25 rows.

DOSKEY implements an intelligent clear-screen function that clears all displayed lines and uses the attributes you have set. The EGA's programmable character height supports a variety of row densities. A peck inside the EGA Technical Reference manual shows that the EGA BIOS (which supplants the normal BIOS interrupt 10h routines) sets aside some additional information bytes in the BIOS data area, bevond those already there.

Of primary interest are the bytes at offsets 84h and 87h within segment 40h. The first keeps a record of the number of displayed text lines minus one; with the normal 25-row display, this byte holds the value 24. The byte at 87h is referred to as the EGA information byte. Among the many things you can glean from examining it is whether or not the EGA is currently the active display adapter. Bit 3 is set to zero if the EGA is active, and to 1 if it's not. Not active means that either a CGA or a monochrome adapter (either of which can coreside with an EGA without causing trouble) has been switched to and is in control of video output.

FUNCTION KEY MACROS When DOSKEY detects a press of one of the function keys F3 through F12, it queues an ASCII text string for output in the same way it readies commands from the command stack: by addressing them with AX and invoking WRITE. COMMAND. The settended code for the key pressed is normalized and transformed to the offset address of the corresponding string.

thess of the Corresponding string.

The only trick DOSKEY must pull here is to sense when F11 or F12 has been pressed. When IBM introduced the enhanced keyboard, new BIOS functions were introduced to support it (see the sidebar "The Enhanced Keyboard"). These new functions are not supported by the old PIOS Measurement. POS included 44.

were introduced to support it (see the sidebar "The Enhanced Keyboard"). These new functions are not supported by the old BIOS. Many programs, DOS included, do not provide any support for the enhanced keyboard. The end result is that F11 and F12 are normally useless in DOS, BASIC, and most applications.

DOSKEY performs a simple test to see if the BIOS supports the enhanced func-

Mitsubishi Makes Todays Selection Of A Personal Computer A Little Easier.

The Mitsubishi MP 286: Quality and compatibility.

Finally. An inclustry standard PC that offers the perfect balance of size and power. The small 15' × 15' footprint fits on any desktop, yet is big enough in performance and reliability to earn the name Missubishi. A company which has been continuously marketing high quality compatible personal computers in the U.S. since 1983.

With all the advantages of uncompromising quality and compatibility, it's no wonder the MP 286 is the PC of choice among business professionals.

Productivity and performance.

Available with EGA, autotracking Diamond Scan™, or monochrome monitors, the Mitsubishi MP 286 provides everything you need for greater productivity. Todav.

The MP 286 is designed with proven features and capabilities for maximum performance. Features that include an 80286 microprocessor that operates from 6MHz up to

8MH-L/Owait. Six slots for expansion and custom configuring. And for acided flexibility and functionality, the Mitsubishi MP 286 can run virtually every MS-DOS* compatible software program. Additionally, the MP 286 can support most Xenix*-based applications.

Stay with the standard. When you're selecting a

When you're selecting a new PC, consider the advantages of convenience and flexibility provided by the industry compatible, smaller footprint MP 286. Compatibility with these currently available hardware and software products machinizes your return

avanator hartwire and strover products maximizes your return on all

Assembled in the U.S.A.

investment. It should make your selection a little easier.

The value of a diamond. It all adds up to the ultimate value in personal computers. And of course, backed by the worldwide resources of one of the biggest names in computer technology: Missubishi.

Our name and logo symbolize an ongoing commitment to product quality, design innovation and customer satisfaction that is also an industry standard. You can be sure our new

MP 286 can make a powerful difference in your business productivity now and into the future. After all, you have our name on it.

Mitsubishi Electronics America, Inc., Computer Systems Division, 991 Knox Street, Torrance, CA 90502. Call 1-800-556-1234, ext. 25. In California, 1-800-441-2345, ext. 25.



Diamond Stan is a trademark of Mesobishi Electronica America, li MS-DOS is a registered endomark of Microsoft Corp. Xenita is a registered trademark of Microsoft Corp. © 1987 Missubishi Electronica America, Inc.

THE ENHANCED KEYBOARD

or all rest the rest manual values and

The abort history of the PC has seen meanly at many (18th) keyboards as does a touring concert pinnist. Offerings to date have included the original PC keyboard, with its misplaced and undersized keys, two ventions for the III-begotten PC/F (the less said about the Chieck, the better), the improved AT keyboard, and finally the "Enhanced" keyboard, and finally the "Enhanced" keyboard Eastly recognized by the 12 function cursor pad, the Enhanced keyboard is IBM's current flavorine.

Parallel to these improvements, the ROM BIOS that IBM pats into each machine has undergence a slow but continuus evolation. Changes have included all the parallel specifically, three new interrupt 16h functions have been added: AL=10h (keyboard read), Ilh (keysiroke status), and 12h (shift status). In IBM's jugon, tended: "BIOS functions.

These new functions are used in the same way as were the old functions 0, 1, and 2. The values returned, however, differ slightly. The old functions do not recognize function keys FII or FI2, and they return the same values for duplicate keys. For example, loading the AH register with 0th and executing interrupt 16h causes the BIOS to wait until a key is struck. Pressing the Horne key on the nu-

PARA PUBLIC 'COOE' Start COOE aegmant CS:CSEG,DS:CSEG,ES:CSEG,SS:CSEG Set by DOS Loader ORG 100H :COH file format CSEG SEGMENT PARA PUBLIC 'COOK' "BIOS support for extended keyes" NEAR MAIN :Address low memory with Es ASSUME ES: HOTHING Tall assembler HOV CX,OFFSET NO_MSG :Aeaume no aupport :Extended shift status AH, 12N 16N INT AL, SYTE PTR ES: [417H] NO_SUPPORT CMP ;Does data returned match? VAR BYTE PTR ES: [417H], 80H :Toggle insert mode AH. 12N tank engin INT AL, SYTE PTR ES: [417H] First metch might be JNE NO SUPPORT : an accident HOV OX, OFFSET SUPPORT_MSG Success NO SUPPORT: BYTE PTR ES: [417H], 80H ;Reators insert state AN, 9 Olepley messega Thru DOS INT AX,4COOM :Termineta program Thru DOS CSEC ENTPT

KBTEST.ASM: The source code for KBTEST.COM, a program that checks your BIOS to see whether it supports the Enhanced keyboard.

meric pad (with NumLock off) returns AL = 0 (indicating an extended code) and AH = 47h—the same value as does the Home key on the dedicated pad. But using function AH = 10h returns AL = 10h when the dedicated Home key is used. This allows programs to distinguish, at the BIOS level, between different and the same page of the same page o

ent keys that have the same nominal meaning.

To take advantage of the Enhanced keyboard, programs must be able to determine whether that keyboard is supported by the BIOS installed in a particular machine. KBTEST.ASM is a short assembly language program you can use

tions. If so, it modifies the original keyboard interrupt 16h to use the extended functions. The end result is an improved DOS. Any program loaded after DOS-KEY can now read the F1l and F12 keys the same as any other function key DOS could read before.

SETTING SCREEN COLORS A PC equipped with either a standard CGA or an EGA normally has 16 foreground colors and eight background colors available to it

DOS interface uses only black and white. But DOS is sympathetic to color in all respects but one. If you clear the screen to the colors you want, they remain there until a CLS is issued. By intercepting and handling the CLS command itself, DOS-KEY negates the operating system's means of enforcing its own colorless

in text mode. Without ANSI.SYS. the

scheme. C
When you press F1 or F2, DOSKEY to increments the variable FOREGROUND to the control of the control o

or BACKGROUND, respectively. Pressing either of them when shifted causes the associated value to be decremented. Then the procedure CLEAR_SCREEN is called, the same one DOSKEY invokes when it traps a CLS command. CLEAR_SCREEN forms the attribute byte it needs before calling intempt 10th, function 6, from FOREGROUND and BACK-GROUND. And guite before it terminates the procedure homes the cursor to restore the DOS wromat to the tool-fel corner of the DOS wromat to the tool-fel corner of

```
100 REM -- BASIC PROGRAM TO CREATE
110 OPFN "KSTEST, COM" AS #1 LEN = 1
120 FIELD #1,1 AS AS
130 CHECKSUM = 0
140 FOR I = 1 TO
                    12
150
160
170
       LINESUM - 0
FOR J = 1 TO 8
           READ SYTE
           CHECKSUM - CHECKSUM + BYTE
180
190
           LINESUM = LINESUM + BYTE
           IF (BYTE < 256) THEN LIST AS = CHRS(BYTE)
200
220
       NEXT J
READ LINECHECK
230
240
        IF LINECHECK -> LINESUM THEN PRINT "Error in Line";280 + 10 * I
250 NEXT I
260 CLOSE
270 1F CHECKSUN - 7517 THEN PRINT "Successful Completion!" :
280
    PRINT
           "COM file is not valid!" : END
                                       78,
    DATA
                              144.
               79,
                       83
                               32,
                                      115,
                                                       112,
                                                               112,
                                                                        111,
                                                                                761
              114,
                               32,
                                      102,
                                                                32,
                                                                        101,
    DATA
                      116,
                                               111,
320
    DATA
              120
                      116,
                              101,
                                               100,
                                                       101,
                                                               100,
                                                                        32
              107
                      101,
                              121,
                                      115,
                                                36,
                                                        51,
                                                               192,
330
    DATA
                                                                        142
              192,
                                               180
                                                               205.
                                                                         22.
                                        23,
                                                       117.
                                                                20,
    DATA
              128.
                       54.
                               23,
                                               128,
                                                       180.
                                                                        205.
               22,
                                               23,
370 DATA
                       38,
                               58,
                                                        4.
                                                                         3.
              186
                                        38,
                                                        54,
                                                                         4,
    DATA
                                               128,
                                                                23,
390
                      180,
                                                                 0,
                                                                         76,
    DATA
              128,
                                      205,
                                               33,
                                                       184,
```

KBTEST.BAS: A BASIC program that will also create KBTEST.COM.

to test your own BIOS version for support for the Enhanced keyboard. A BA-SIC program that will generate KBTEST.COM when you run it once is listed as KBTEST.BAS.

Although IBM publishes a test for the presence of extended functions, it is long, slow, and more complex than necessary. KBTEST determines if the functions are present by using the extended shift status function call to read the settings of the Shift keys and comparing the byte maintained at 0:417h. If they don't match, the extended functions are not supported. If they do match, a single bit is changed in the status word and the function is called again. The results must match both times to verify that the extended functions are present.

—Robert L. Hummel

returned result directly to the BIOS status

Robert L. Hummel is senior technical editor on the staff of PC Magazine.

the screen, where it belongs.

If there's a partially completed entry on the command line when you change screen colors, that entry is automatically cleared. The INPUT routine wipes the input buffer clean by zeroing the character count that has accumulated and simulating a press of the Enter key.

MODIFYING MACROS If the strings assigned by default to function keys F3 through F12 don't suit your needs, they're easily changed with DEBUG. The rules for new mean strings are simple: (1) each for new mean strings are simple: (1) each string consists of the text of the string consists of the text of the string length, and (2) the total length of the string length, and (2) the total length of the string (including the length byte) cannot exceed 32 bytes. You need not end a string with a carriage return (ASCII 13, or 00 in wheat decimal). The offset addresses corresponding to the beginning of each string, together with the associated command, are listed here:

```
0148h
               dir
F4
     0168h
               type
F5
     0188h
               copy
F6
     01A8h
               delete
     01C8h
               chdir
F8
     01E8h
               path
P9
     0208h
               browse
F10
     0228h
               cls
    0248h
               backup
FII
F12 0268h
               restore
```

You install a new string simply by overwriting the text of the old one with that of the new. If you want the command string to be automatically executed when the function key is pressed, terminate the clude the FPA, definite in the string's character count. If you omit the FPA, the string will be output, but you'll have to press Enter yourself to execute it. The default setminature that have been a string that the limitature that have been a string that the limitature that will have been a string that the string that the string that the string that limitature that will will be string the string that the string that the string that the string that the limitature that will will be string that the str

the command is meaningless. Pellowing is the script of a DEBUG session that changes the macro associated with the F10 keys "C*HLDOK." A de-limited by the F10 keys "C*HLDOK." A de-limited by the F10 keys and the

First, make sure that DOSKEY.COM is in your current directory and that DE-BUG.COM is in the current subdirectory or one in your PATH. Then, at the com-

mand line, enter

The first command invokes DEBUG from the command line and automatically loads (but doesn't execute) DOSKEY. The second enters the length byte, the text of the new command, and the FF delimiter (hex for decimal 255; DEBUG always thinks in

hexadecimal) into the space set aside for the F10 macro. The "W" command saves the revised DOSKEY back to disk, and "O" guits DEBUG.

DEFAULT COLOR CHANGES DOS-KEY initially assumes you want to use the DOS default drab. So until you customize your display with F1 or F2, the CLS command works as it normally does: it clears to white on black. But you can reassign the initial color selection to anything you want, again using DEBUG. If you prefer white text on a blue background, for instance. DOSKEY can be modified to set that combination the first time CLS is issued. The advantage is that you aren't forced to hammer the F1 and F2 keys every time you boot up. A simple CLS will do.

Two bytes inside DOSKEY define the startup color selection. The byte at offset 0142h, labeled FOREGROUND in the source listing, determines the text color

(07, or white), and the one following it at 0143h is the initial background color (00, or black). The first byte can take on any value from 0 to 15, and the second anything from 0 to 7, inclusive.

Color attributes have the following nu-

- merical values:
 - Black Blue
 - Green 3
 - Cyan (Light Blue)
 - Magenta
 - Rrown White

The colors 8 through 15 are simply brighter ("intense") hues of the first eight colors. You can obtain the number corresponding to a bright color by adding 8 to the original number. Color 15, for example, is bright white, while 7 is normal white. Color 14, yellow, is nothing more than bright brown, whose number is 6. Attributes (which we think of as "colors" in a color system) take on an entirely different meaning in monochrome systems.

DOSKEY should prove compatible with most other programs, including resident utilities. It can be loaded in any order relative to other TSRs. The only conflict I can foresee is with other TSRs that take over DOS function 0Ah. Fortunately, very few programs other than command line enhancers (like DOSKEY) have any interest in that particular service. Nonetheless, I must issue the standard ukase that it's an unfortunate but presently unavoidable fact of life that memory-resident programs carry no guarantees of compatibility. But even if it meant giving something else up, once you start using DOSKEY, 1 don't think you'll want to be without it.

Jeff Prosise is a contributing editor of PC Magazine.

MeetThe New

Chairman." is the first true multiuser builetin board software. Now up to six users can access your bulletin board simultaneously.

Are you tired of using expensive online services as your company's message center? Chairman can handie all your electronic mail nceds at a fraction of the cost, and with a higher level of security.

WE SPEAK YOUR LANGUAGE *

TDo you service your customers' software? Use Chairman to send new software versions to all current users. Chairman can also become a clearinghouse for programs and data files. You can upload or download both binary and ASCII files.

For more information, contact DMA the leaders in communications software



Do you have trouble getting customers to fill out questionnaires? With Chairman, you can conduct fast, effortless electronic surveys. Use the built-in editor to create a list of questions.

Chairman will record user responses for your instant analysis. We developed Chairman initially to work on

PC Magazine's extremely busy and demanding Interactive Reader Service. Chairman is written in DMA's powerful ASCOM IV script language-

and we include the actual source code, to make customization for your particular needs a snap. Are you ready to revolutionize your electronic communica-

tions? Start at the top-with Chairman. DYNAMIC MICROPROCESSOR ASSOCIATES.

545 FIFTH AVENUE, NEW YORK, NY 10017 (212) 687-7115

CIRCLE 330 ON READER SERVICE CARD

The Graphics Gallery makes winning presentations.

Here's graphic proof.

Seeing is believing. Which is why Hewlett-Packard invites you to call now for a free Graphics Clients by Market Gallery Sampler - an impressive collection of colorful business graphics produced

by our powerful and flexible oftware

We want you to see for ourself how The Graphics Gallery can give you an important winning edge. How it can increase the impact of every presentation and irn simple reports into persuasive ocuments. The Graphics Gallery can p you get the most out of other Do you use 1-2-3° from Lotus®? The

Graphics Gallery will easily transform

ose unimpressive Lotus raphs into persuasive, stomized presentations nanced with color, text. ustrations, and more. Interested in deskton blishing? Our remarkable tware works with the ding desktop publishing ckages. And it creates uly professional results.

What's more, The Graphics Gallery gives you a flexible choice of output. Choose from colorful verhead transparencies produced by an HP plotter, professional 35mm des, or sharp, printed output-the kind you get with the HP LaserJet printer. If you've got an IBM PC/XT/AT

or compatible, call right now for your free Graphics Gallery Sampler and the name of your local Hewlett-Packard dealer. We want to prove to you that seeing really is believing.

Call 1-800-367-4772, Dept. 709S right now and get a FREE Graphics Gallery Sampler from Hewlett-Packard

Finance





dett-Packard Company, Attn: Inquiries Dept 1000 N.E. Circle Boulevard, Corvallis, OR 97330

Graphus Gallery really is, so send me your free Graphus Gallery really is, so send me your free Graphus Gallery Sampler and the name of my local Hewlett-Packard dealer
Name
Title
Company
Address

SS Micr≢Centers,Inc

rder Done

ACCESSTM PC/10



ACCESS" PC/10 100% IBM" COMPATIBLE

MEMORY 256K RAM Standard Expandable to 640K on the Motherboard

SPEED 4.77 and 10 Mhz, Keyboard Selectable

POWER 150 Watt Power Supply KEYBOARD 84 Key "AT" Style Keyboard DISK DRIVE 1 360K 5 1/4" Disbette Drive with Controll

PC/10 STARTER SYSTE

A Complete System with Everything You Need to Start Computing



COMPLTER 256K w/4.77 and 10 Mhz Turbo Speed, Mono Graphics Adapter, 1 360% Hoppy Drive, Printer Port

PRINTER Name Brand w/Graphics and NLO Modes SOFTWARE MS-DOS 3.2, CW Basic Word Processor, Database,

MONITOR High Res (1)00 line) Spreadsheet & Communications Amber TII

PC/10 Starter System w/Color Monitor, Color Card \$1.17500

ACCESS™ 286/12



ACCESS" 286/12 100% IBM" "AT" COMPATIBLE KEYBOARD 101 Key "AT" Style

MEMORY 512K Standard Expandable to IMB on the Motherboard SPEED 6 or 12 Mbz, Keyboard or Toggle Switch Selectable

Keyboard COMPATIBILITY Runs All the Software Designed for the IBM**

ACCESS TN 286/12 Enhanced 512K SYSTEMS

Hard Disk and Floppy Storage Included

ACCESS 286/12 BASE SYSTEM w/1.2MB FLOPPY STORAGE DRIVE 1.2MB Floppy

Disk Drive CONTROLLER Floppy and Hard Disk Combined

ACCESS 286/12 BASE SYSTEM w/42MB DRIVE

STORAGE DRIVE 1.2MB Floppy Disk Drive and a 42MB Hard Disk Drive CONTROLLER Floory and

Hard Dick Combined



MAGNAVOX™ RGB

\$29700

\$6000



\$9400

\$7000

\$39900

\$15500

SUPER EGA

EPSON PRINTERS

EX-800 SO COE 300 GO CPS EX.1000 152 (DV 30050 CPS PX-868 160/35 CPS 10" Parallel PX-2868 200/40 CPS 15" Parallel LX-800 189/30 CFS w Tractor LO-800 IN COL 60 CPS 10-1000 HO COL 60 CFS NZO 10-2500 180 CPS 132 CDE



SEAGATE" 42MB HIGH PERFORMANCE

60MB TAPE BACK-UP 71MB 28MS HARD DISK

Streaming Tape for "AT" Drives

"AT" HARD DRIVE

Internal Hard Drive

ACCESS 1200 BAUD INTERNAL Auto acreer, auto dislive-deal, built-in speaker wholame control. RS-232 serial port and free solwan \$9000

ACCESS 2400 BAUD INTERNAL \$20900

ACCESS 1200 BALID EXTERNAL \$10900

ACCESS" Multi 3MB "AT

\$29€



ACCESS™ 2MB EMS Long" fixed" speci. B46 C to 2003 of B00, software

SOME HAND DISK CARD 14591

Our Policies and Procedures: NO Freight Charge for UPS Ground! PO'S ACCEPTED from Fortune 1000 /

 NO Surcharges on Credit Card Usel TOLL FREE Customer Service! I Year WARRANTY on All Bardware Products

\$6900 ACCESS™ Math

annonnon (end"mort on \$119.00 \$159.00

Intel"soon

ACCESS** Multi I/O*AT*

\$11900

ACCESS Diskettes

1 (800) MICROS4 Track Cod #AC93

\$12.15 Intel"sort; side

\$11.75

ACCESS™ Multi 384

\$6900

ACCESS" Memory

\$215.00

The IET-SETTER, laser printer.

The secret to my success.



In business, your first impression may be

That's why I purchased the C. Itoh let-Setter laser printer. It's the first personal laser designed for achievers like me. And it's affordable!

First impressions are lasting impressions.

When I first started using the let-Setter to print daily reports, memos and budgets, my associates couldn't believe how I instantly gained esteem from too management.

But what really sold them on my talents was when i closed an account the firm had been working on for months with a business presentation printed on -you guessed it -the let_Setter

Now everyone wants to get in on the action. And wait until they find out how affordable let-Setters are. They won't even need to purchase any additional software since it's compatible with the HP Laserlet " series and uses optional Diablo and Epson emulation cartridges.

Anyone can use it.

My secretary already has an eye on the Jet-Setter to handle the volume of text generated on WordPerfect™ and other word processing files. And you should have seen the response I got when I presented my quarterly report with eveopening charts and graphs instead of just numbers. Even our communications manager

wants to purchase the Jet-Setter to publish internal newsletters using Ventura Publishing 18

or PageMaker." desktoo publishing packages. The let-Setter grows with your business. As more people catch on to the let-Setter revolution in my office, they will discover even more

exciting features this printer offers, like its large library of font cartridges and expansion memory for full page graphics at Roman, 10 point, program for full page graphics at Roman Italic, 10 points, program Italic, 10 points, progra secret to my success? The

Roman Bold, 10 p Jet-Setter from C. Itoh. How long can you afford to be without one of your own?

For the C. ttoh dealer nearest you, call Toll-free (800) 423-0300

19300 S. Hamilton Av., Ste. 110 . P.O. Box 9085 Torrance, CA. 90508 • (213) 327-2110

ADDING NOTES TO DIRECTORIES



DIRNOTES.COM alphabetizes and lets you annotate your directory listings so you can tell at a glance which file contains the material you need to find.

In of even the best and most scrupalously kept directory filing system can solve the DOS filename problem. The difficulty is that in eight characters (plus extension) you often can't say enough about a file to know, later on, whether it's the file you need. Did Peterson OK the Stanton deal in PSON-MEM 425, or was it in PSONMEM-5017. MEM 425, or was it in PSONMEM-5017. MCIL 158. MCIS 508, it downwards for the problem of the "both even of the problem of the problem of the "both even of the problem of the problem of the "both even of the problem of the problem of the "both even of the problem of the problem of the problem of the "both even of the problem of the problem of the problem of the "both even of the problem of the problem of the problem of the "both even of the problem of the problem of the problem of the "both even of the problem of the problem of the problem of the "both even of the problem
DIRNOTES helps you remember what your files contain. It lets you supplement each filtename in a directory with a descriptive field of up to 38 additional characters. The "DIRNOTES. ASM" and "DIRNOTES. ASM" and "DIRNOTES. METERS ASM" is things in this article provide alternative ways to create DIRNOTES COM. BEET still, you can save the typing chore by downloading any of the three files by moden from the CM agazine Interactive Reader Service, as described in the sidebar.

Once you have a copy of DIRNOTES .COM, you invoke it by entering

DIRNOTES [d:][path][directory]
at the DOS prompt. The program defaults
to the current drive and directory if you
don't specify otherwise.

oon t specify otherwise.

DIRNOTES displays an alphabetical listing of the files in the directory. Each filename is followed by the file size and the date and time last updated, just as if you had used the DOS DIR command. That display, of course, takes up only the left half of the standard 80-column text mode

screen. What DIRNOTES does is enable you to use the right half of the screen to add descriptive comments about your files.

When DIRNOTES is initiated, an inverse video bar appears to the right of the first directory entry. You simply type in your description for the filename that appears to the left. Pressing Enter will move the har to the next filename and position the cursor for the beginning of your next filenote, though you do not, in fact, have to use the Enter key. The Up and Down Arrow keys let you navigate among the 21 filenames each screen can hold. When the bar reaches the last row, you can either continue scrolling one entry at a time, or you can use the PeUp and PeDn keys to move to the next page of filenames. Ctrl-PgUp and Ctrl-PgDn take you to the top and bottom row on each screen, and Home and End go to the beginning and end of the directory.

DIRNOTES operates in overwrite

■ DIRNOTES displays an alphabetical listing of the files in the directory followed by the file size, date, and time last undated. mode. Thus, to edit an entry you can either type over it or use the Backspace key to erase. The Left and Right Arrow keys let you move the cursor without deleting the characters under them. Since DIRNOTES is only a half-screen line editor, I decided not to add the code necessary for the Ins

and Del keys.
You press Esc to exit from DIRNOTES and return to the DOS prompt. If you have entered or deided your notes while in the program, a data file with your notations will automatically be created in the same directory as your files. The data file will be undered DIRN-del-DAT, where ade are the first three characters of the directory and the directory and the directory of the directory notes.

If you use only the navigation keys while you're in DIRNOTES, no data file will be written. You can take advantage of this if you just want to take a quick look at an alphabetically sorted directory without creating a .DAT file. Just restrict your keybourd use while in DIRNOTES to theypad. Alternatively, you can create a file with your alphabetized directory Jisting, but without notes, by just hitting the Spacebar before esting.

The DIRNOTES data file is a pure AS-CII image of the directory listing and your notes. This means you can get a hard copy of your notes by redirecting the data file to your printer. To print a listing of your PCMAG notes, at the DOS prompt you

DOWNLOADING DIRNOTES

The programs that appear in our Programming/Utilise column (as well) as other programs we publish) can be downloaded by moden from the PC Magazine Interactive Reader Service. There is no charge for this service, but users are cautioned that these programs are copyright material and are made available only for individual, noncommental user. You may make copies for mercial electrone bulletin bounds, as long as no charge is involved. However, making copies for any commercial purpose is strictly probleted. The modern number for PC-IBS is (212) 696-4305. Set your modern and communications software to use 1200 (or 0.00) bys. & data his., 1 stop his, no parity. PC-IBS files with a COM, EXE, or ARC extension require that you also use the X-modern error-checking protocol in order to prevent the possibility of data corruption; our other files (e.g., with coxtensions of ASM or BAS) can be with coxtensions of ASM or BAS) can be valued as the control of the contr

If you use the Xmodem protocol, you can download DIRNOTES.COM directly, saving typing or downloading either

the .BAS. or the .ASM version. DIR-NOTES.BAS, whether entered from the magazine at your keyboard or downloadness of the second of the companies of the state DIR-NOTES. COM-automatically cersical DIR-NOTES. COM-automatically cercisis DIR-NOTES. COM-automatically cersical DIR-NOTES. COM-automatically cerles. BASIC. (The cont., place to use BASIC. (The cont., place to the nand on PC-IRS, allows you to modify the and on PC-IRS, allows you to modify the program, but requires you to use an macro assembler (IBM or Microsoft, Version 2 or later) and the following commands:

MASM DIRNOTES; LINK DIRNOTES; EXE2BIN DIRNOTES DIRNOTES.COM

DIRNOTES AT A GLANCE

DIRNOTES presents a DOS-formar, alphabetically sorted directory listing in the left portion of the display, together with a coordinated, 38-character field on the right side in which you can enter descriptive comments about the file contents, hot keys, etc. Your notes are automatically saved when the Esc key is pressed, in a file called DIRN-abc-DAT, where abe represent the first thate letters of the directory varies.

Syntax:

DIRNOTES [d:][path][directory]

Operation: The cursor Up and Down Arrow keys are used to scroll the coordinated directory listings/notes line by line. FgUp and Crit-FgUn take you to the top and bottom of the screen, and Home and End go to the beginning and of of the listings. The DIRNOTES editor operates in overative mode and incorporates a backspace delete. The to move the cursor without deleting characters beneath it.

A "U" immediately after the directory listing indicates that that file has been updated since the last time the DIRNOTES data file was updated, so the file description may need to be changed. Be sure to update all marked file notes the first time, as the "U" is not repeated if you update any.

not repeated if you fupdate any.

The .DAT file created by DIRNOTES is in standard ASCII, and so
may be TYPEd. Users are cautioned
against attempting to edit the .DAT file
with a word pocessor, however, as the
record field lengths are fixed-length
and any changes made other than by
DIRNOTES itself may render the file
unrecoverable.

Dy

would enter the following command: TYPE \PCMAO\DIRN-PCM.DAT > PRN

One word of causion is in order here, however. Since the data file with you notes is in ASCII format, you may be templed to do some last-minuse elimpted to go your notes by importing the .DAT file into your word processor. I recommend that you don't do it. The fields of the data file are designed to be a specific length, and if you do any outside tampering. DIR. NOTES will not be able to read the file affective to the control of the cont

INSIDE DIRNOTES DIRNOTES begins by saving the current drive and directory, using DOS function calls 19H and 47H, respectively. The current defaults will be needed to restore to the original directory on exit. If a drive and/or directory

rectory on exit. If a drive and/or directory request is included as a parameter, DIR-NOTES then changes the defaults. DIRNOTES then checks to see if it has

a full segment in which to work. If the stack pointer is found to be less than 65,500 (that is, there is less than 64K of available memory), the program exits with an error message. The 64K requirement is imposed so that DIRNOTES can display a directory of approximately 700 filenames

with the minimum of memory maintenance, and should cause no problems in the majority of today's typically RAMnich PC environments.

Next, the attribute at the current cursor position is retrieved via BIOS video I/O interrupt 10H function 8. This attribute is then used in clearing the screen by scrolling with video function 6. That way, any custom color scheme you may be using is preserved.

The attribute of each on-screen character is contained in the screen buffer in the byte immediately following the character byte. The first four bits (0 through 3) of the attribute byte are responsible for the fore-

	Dirnote:	d][pate][directory	1	Ĺ	HOVER	DISPLAY	
TE SECRET					1,007	STORE_PATE	
THE CR. COL	E, 08:001		FORMERS TO EXCUSES	Shore bound	mening.	We sill be erition	directly to the sores buffer ; and the status register.
OT:	200			so en need	the diag	iny card address a	nd the atetus register.
PERCORT COMAMPEN MEDIES AN DOT STAR	DATA A		-Davie Publishing Co. ',18,18	BORPLAY	MOY MOY MOY ADD PLINE POP	CS CS	Point to the NOM BIOS date area; ; and gat been address of sotive ; display card. add air to get atetus register ;Done there, so restors date sagmen
NAME OF THE PARTY	DB † DM † DM gg DB gg DB 76				HOY ZE HOY XON HOY INT	STATUS SHO, AX AX, 38AS MEDICADE VICEO, STO, 60698K 6W, 6W AH, 6	Store atotum registar. Statum port of MCMD card is 36ah, iff that's abat we pot, 11's MCMD ; siem 00100 eo add dddb. ; Gat current stributs ; of display page mero,
NO POS S OFFIST D OFFIST IE SHO SYT		7537 307733 D-21-146			NOV NOV	#CRMAL, AM AM, 11101110 1879ERSE, AM	:Fire oder bits. :Fire oder bits.
E 1740	70 0	13		MINISACO:	MOV CALL	CLS S1,OFFSET LOADING DX,UCIGN DISPLAY TEXT	Display loading message.
THE PLACE OF SECURITY OF SECURITY SECUR	20 1	et anough memory#" evelid directory#" too many files#"			HOV HOV HOV DEP	DI OFFSST BUFFES CX, Seese AX, 24248 STODE	(F111 buffer with spaces.
RECTORY LES ATUS LIMB	DB '5	Files'.0 'reas Est to smit', laving '.0	directory soles.",0	Sead all C	e direct	ory filename and	atore se recorda in buffer.
		Tirat. Since we mil me requested drive : to they can be reat	be changing the default drive that directory, we need to make the tred. If lead that ddK, dait.	FEMD_D18:	MOV MOV 1NT JWC	DX.GPPHET STAR_DO CX.6 AR.439 318 STORE_HAME EXIT	First first matching.
otestes:	COOR A			STORE_HARE:	MOV MOV CALL	ESIT DI,OFFSET BUFFES OF,COODS EUFFER RAPE	iff empty directory, exit. iffet up pointers and store i first filaname.
DESCRIPTION OF	MOA LECT	AR,108	idet ourrest drive.	FIRD SOUT:		AR ATE	Find next matching.
	MOA MOA TRA	CUMPUST DOSK.AL SE. COPTEST CUMMENT ORT_DIM	post (Set current directory.	FIND_SERT:	HOY INT JC INC CALL	STORE COURT	if carry, so more names.
	MOV JA JA	SP.65000 SE.OFFERT GOT_ENG PAPER ENGON_EXIT	1Do we have daky		CMP 26 HOV	SCHTER SAME: DI.BP PIND NEWT DX.OFFERT TOO MAKE SHOOM SELT	:Are we decreashing atout? :If no. find maxt. :Size, axit with message.
Paras the or DIRROTES F1	CMP	ina for parameters lith the cheractars syrm PTR DO:[68H]	and append the : of directory name. S :Any parameters? LIF no. skip parame.	store buffi number of i	P end as	dream and page end e alphabetize file EMB OFFDET, DI EX, COURT	Store anding offeet.
	HOY	31,418	Blee, point to first character.		MOV	AX.BE Cb.10	
TT_PAREE:	CHA TX CHA TX CHA TX	AL,15 AFFERD AL,33 MEST FARGO	Carriage returnT If yee, done here. Leeding apaseV If yee, get next byte- Eare eterl.	MEMS_COUNT:	MCA MCA MCA	CL,18 DI,OFFRET FILET+2 CL	Convert to decimal, Severas direction, /Foint to atorage.
	MARK	g1 Junes			8785 A20 87059 8090	AL. AR	Convert to ASCII. Store the remainder.
ET_FARA	LOSSE	45 17	pRnd of parameter? III use, done here. prive request?				:Ara we down?
ET_FAM.	LODGE CHP JZ CHP	AS, 13 ENG PARA AL. T. HELT PARA	pind of parameter? ilf yes, done here. prive request? ilf no. get next byte.		TON CMP Jez	MEET_COUNT	
ST_PARA:	LOSSE CMP JE CMP JIEL MOV AND SISE MOV	DE, STE PARA DE, ST. 2 DE, STE PTH [B1-2 DE, ST. 2 AN, SER	Convert to DOS format. Ard change drive.		CLD CMP JA MOV	AX.8 MEET_COUNT ST.24 SOUT AX.160	:Back to forward direction. :Ecough to file one page? :If yes, use default setting. (Blse, calculate last record.
ET_PARA:	LOSSE CMP JE JICE JICE MOV AND SISS HOY 1971 JMP	MERT PAPA DL. 0770 PTH [B1-2 DL. 3PE DL. 7A' AN GEN 21H SOURT MEXT_PARA STTE PTH DD:[B1-1 OF	Fisc end of parameter. ,0 Convert parameter to ASCIII.		CHP JAZ CLD CHP JA HOV HIL AZD HOV	AX.0 MET_COUNT OX,14 SOUT AX.160 6L AX.403 PAGE_ERO,AX	:Back to forward direction. Spough to file one page? If you use default exting, size, estociate last record. 1Add her offset. Skip eart if only one filene
	LODGE CRP JZ CRP JRCY AND SIDE HOY FOP DBC HOY FOP DBC HOY FOP	BETT FAMA DL. #FTS PTM [B:-2 DL. STK DL. 'A'. AM, #EM 21H 2000ST MEXT_PAMA STTE PTM DD: [3:-1 DX AM, 35E AM, 35E	pFis6 end of parameter.], #	BORT:	ONP JNZ CLD CNP JA MOV MIL AZD MOV CNP JZ MOV SIGN	AX.8 BEIT_COUNT BI.2d SOUT AX.140 AX.440 AX.440 PAGE_ENO.AX GI.1 OPER_FILE BI.2DO_COFFEET BI.461	iadd har offset. ;Ekip sort if only one filane ;End of filenames in DX.
	LODGE CSP JEL MCV AND SSE HCF 13F2 HCP FCP DSC JSC JSC JSC JSC JSC JSC JSC JSC JSC J	METT PAPA DL. 0770 PTN [8:-2 DL. 37% DL. 37% DL. 4. AM, ESS 218 POOST MEXT_PARA ETTE PER DD: [31-1 DX DX DX DX DA. 38%	pFis6 end of parameter.], #	HEXT_PASS:	CMP JMZ CMP JA MCV MIL AZO MCV CMP JZ MCV SEE MCV MCV MCV MCV MCV MCV MCV MCV MCV MCV	AX.0 BEXT_COUNT ST.14 SOUT AX.160 AX.160 AX.160 AX.160 PAGE_REG.AX 61.1 OPEN_FILE SE_REG.OUTGET SE_	indd her offeet. Skip eart if only one filene End of filenemes in DX. Foint to start of buffer.
D_MAA:	LOSSE COP JE JEC JEC HOT JEC JEC JEC JEC JEC JEC JEC JEC JEC JEC	BETT FAMA DL. #FTS PTM [B:-2 DL. STK DL. 'A'. AM, #EM 21H 2000ST MEXT_PAMA STTE PTM DD: [3:-1 DX AM, 35E AM, 35E	Flad end of parameter 		CMP JRI CLD CMP JA MCV MIL AZD CMP JI MCV MCV MCV MCV MCV MCV MCV MCV MCV MCV	AX.0 BEXT_COUNT BEXT_COUNT BEXT_COUNT BEXT_COUNT BOX 1.460 \$1.460 BOX 1.460 BOX	iAdd her offset. IBits sert if only one filene IBnd of filenemes in EX. Foist to stert of buffer. Fot in source and deatimatic registore.
D_MAA:	LOSSE COP JELL COP JE	HETT PARA DIL, GTDE PTR [B1-2 DL, GTDE PTR [B1-2 DL, GTDE PTR DL, GTDE DL,	iFlad end of paymenter. Jo Concert, planement to ADDIIE. JOSTICH SERVICE LAUGHT. Change directory. JOST default directory. JOST default directory. JFind end.	HEXT_PASS:	CMP JMD CMP JA MOV MELL AZD MOV CMP JI MOV MOV MOV MOV MOV MOV MOV MOV MOV MOV	AX.0 SEXIT_COUNT SEXIT_COUNT SEXIT_COUNT SEXIT_COUNT AX.450 AX.4	indé her offeet. Skip sert if only one filane 1806 of filenames in 82. Foint to stert of buffer. Inti to nourse and destination I registere. Scompare filenames. Iff already in order, skip.
D_PARA:	LODGE OF JET	METT PARA DL, 47TE PTR [B:-2 DL, 47TE PTR [B:-2 DL, 47TE	iFlad and of parameter. Convert parameter to ADDII a. Barriew ateri. Change iferency. Exit if invalid parameter. Sont default directory. IFlad and. INVALID ADDIES.	MEXT_PASS:	OND JIST CLD CMP JIST MOV MOV SEP JIST MOV MOV MOV MOV MOV MOV MOV MOV MOV MOV	AX.9 SILECTORNET SELECTORNET S	indd her offest. Ship eart if only one files who of filesemen in NS. Foiet to start of buffer. Fire in source and destination frequency of the fire of the filesement. If already is order, skip. Ship, recover pointers.
	LODGE COP JET JOS SEC JET	HETT PANA DL. 67TH PTR [B1-2 DL. 67TH PTR [B1-2 DL. 67TH PTR [B1-2 DL. 67TH PTR DL. 67TH DL. 68TH DL.	iFlad end of paymenter.	HEXT_PASS:	OND JACO COP JA MOV MILL ACO MOV SEP HOV MOV ACO HOV SEP JES HOV MOV MOV MOV MOV MOV MOV MOV MOV MOV M	AX.9 SECTIONS SECTION	indé her offeet. Skip sert if only one filane 1806 of filenames in 82. Foint to stert of buffer. Inti to nourse and destination I registere. Scompare filenames. Iff already in order, skip.

■ PROGRAMMING/UTILITIES

17808_0KB	AZO	8X,81 8X,0E	:Foint to next record.		200	SHORT BET_REY	
	JB JB	BEXT_SORT	ind or topy iff he, bubble eori mest. Whe there exchange made? iff he, done here.	CSt:	cre	AM. 10H	:le it corriege return?
	25 218	DE OF	ilf no, done hore. Else, move top down one record.		HOT HOT	BS BYTE PER CUES POR,41 BROWN SCHOLL_SOWN	(Cureor to beginning of line.
		SHORT REST PART		161	ONP	AF NEW	:ZeckepaceT
Attempt to	roed ol	directes.			190 21 180	LETT AUROW BYTE PTH CUMS POS.41 GIT MAY BYTE PTH GUNG POS	lare se elreedy at beginningf iff yee, skip.
PSN_FILE:	HOV HOV INT	DE,OFFSET DIRECTES AE,30000	Open DCRECTES For reading.		MON CATT	STIE PIN CURS POS AL, 32 STORE CHAR SHORT DET KEY	(Rise, cursor left one. (And replace with space
	30	SEADY	ilf not found, whip to display.		-24		
	PESH PCP	NE.AX NE	:Save filebandle.	LEST_ARROW:	282	AY, 480 FIDET ARROW BYTE PTR CUPS POS, 41	
EAD_FILE:		3E 3E 3E,00000	States where transfers fraction		25 057 280	BRT KEY BYTE PTR CURE POS SWORT GET KEY	:If no, back cursor up one.
	MO.L.	CE,57*81 AB,3PH	:Point above directory liming. :Reed up to 37 records at a time.	RIGHT_ARROWS	CMP	AR,40K	(Right error)
	DEE	213			CRF	BYTS PTR CURS POR. TS BBT KEY BRTE PTR CURS POS	sare we already end of line?
	ATD	AE,B CLOSE_FILE DE.AE	iBnd of filet ilf yee, done here.		DMC JMP	SHIR PER CURG POS SHIRE DET BEY	(Cursor right ose.
	MOV	BYTE PTR [DIT. LANS	Blee. point to end and tack on Ctrl I as end eigneture. Was it a full read?	IP_ABRON:	CMP JMZ	AX,480	(Up erros?
	CHP	AE,37-91			HOY HOY	DE AFRON SF180 DE.STYDEE	:If you, move ber up one line. :And size the cursor.
	HOY	HOF_PLAG, 1	Siee, fleg as end of file.		Call	SCROOL RAR SHORT DET KKY	the side of Color.
Sere se wi	I match	old DIRSOTHS with new deleted files will not	Ersetory : find match. :	DE_APROX:	CMP JMZ	A11,58H	(Down errow?
				SLACCT DOMP.	MOV	37 160 56,100H	ilf yea, eow cutnor and bor d
COMPANE: CEST FILE: CEST MATCH:	NOT NOT	SE, OFFSET BUFFER SK, BORRO	:Point to first record. :Foint to road buffer.		CALL	AR.58H PO TP SP.168 DE.18SH SCEOLL BAR DET_KET	
MATCH.	MOY	SI.RX DI.RP CX.8	(Set up ecords and dratination.	PG EP1	O97	47 450	chan spT
	8872 JBS	END MOTE S1,20	:Compare #11 12 cherocters. :Skip if no match.		MOV Cali.	PG_DN SP,-01*21 SCHOOL	:If you, move up 21 lines.
	03A 03A	51,26 51,38 CX,28	i elec point to note.		387	SHORT BOTTOM BAN	sand move bur to boltom.
	952°	MOVEN	Stare sate.	PO_DM:	CNO-	AK,DIN CTSL PG UP SP.8[+2]	steps down?
	210 212	81,67			CALL		:If yet, move down 21 lines.
	NOV	DC.BT CE.13 CMPSH	:Kae eize or date rhampoff	CTRG, (10, 10P)	200	SHORT TOP, BAR AN, MAR	SAND move bur to top. SCHILL PRODIT
	J9Z	END MATCH	off use, remove "N".	200 MAR-	Jez	CTRL PO IN	12f uss, now ber to ton.
BID_HOTE:	ADD	SECRI END MATCE	:Skip reet end go to next record.		HOF JRP	CUES POR JUNK SHORT UPDATA MAKE	tas dest' sous en. 12 adr.
	282	SE,01 STTE PTS DO-[SE].IAN NEST MARCE	Point to mest record. Are we st the end? If no, compere. Point to rest record.	C195_PQ_D91	CMP 2162	AX, 78H HORK	(CEPT PADMY
BID MATCH:	ADD	SP. ST Sets PER DS:[SP],52	:Feint to rest record. :End of directory listing?	DOTTOM_BAR:	MOY	SI,PAGE_END AX-SI	:If you, nowe ber to hottom. :Divide pure red by :BE : 50 get cursor row position.
	JNZ CNP JNP	PP.BT SETS FER DE:[SF],32 SEST FILE EDF FLAG,1 READ FILE	:End of directory listing? :If no, check for matches. :Sise, and of file?		709	31,100 AE,423-103	: to get cursor row position.
LOSS FILE:	PCP	MEAD_PILE	ilf no. roed more.		100	76,00 36,163	
Luce_File:	HOV	AB, 300 218	Cione file.		DOY MOY	DE.AL	
				170475 247-	MOV	DE., 208 CUMS POS. DX MOVE BAR	(Displey uplates.
Now, as an	ready	to Initialize the across	-1		CALL	SET DURSON	1910/101 4-11111
EADY:	MOV MOV	AX,VIDEO_SEG ED.AX	:leitlelize video exgment.	1080-	299	SMIGHT REAT KNY	(News)
		DE.4	:Roe #: column 3. :Diepley "Birectory ".	HOME.	JEZ	AB, 47% SHO KGF CENTOFFSET, OFFSET BUF SHORT TOT BAN	TAY If you move limited and
	MOT	DISPLAY TEXT AN, 198			190		
	ADD CALL	218 AL. 'A' WRITE TEXT	Get drive. Convert to ASCII.	730_627:	CNP JNZ	AE. AFR FOR FE. RED OFFEFT	;8nd7
	MOV CALL	AL. 'I'	:Display It. ;Add colon.		SUB CRP	#E, BID 099997 #E, #1-21 #E, 099997 #39999	ilf yes, some listing and i bar to bottom.
	CALL	SI, SOF	ides directory.		286		
	CALL	SI THE	Write It on soil. New 26; online 15.		180	CUR OFFSET.PE SHORT POSTOR NAME	
	MOV MOV	DK. I PARTS	:Now 26; onliam 13. :Exeplay file count.	10(0)	CNP 2100	ME.T MAY METT	Hee'7
	96216	DISPLAY TEST DE, 1833E SI, 0778ST STATUS_LIBS	:Res 26; column 50 :Display "Prese Eso to exit".	BEST MEN.	280	SELT"	ilf yes, exit.
	CALL	DL LEYSTER	:Put up cureor ber.	Ann., SEE			
	CALL	DAR UPDATE SCHOOL CHRS POR, 225H	Display directory listing.		80	1900771680	
				This extens		rulle the serven	
We are read loop here.	ly for b	Por mer begatroses.		1			
	CALL		illedate cureor position.	2790LL:	MOV ADD	\$1,098_069995 \$1,86	idet current offert. ;Add organized direction. ;If signed and EpSp request
HT_XEY:	MOV INT	AN, P	Update cureor position. Well for Royetroke.		CM2	51,8F CK_10401 SP,-81*21	ilf signed and PpSt request then below stert.
ecu.	OWN	AL 52		OX_LONGS:	CNF	EL-GEFROT EDFROM	(If above start check apper):
	73	CR PATT ATTA CHEN AND TO	:To it again or above? :If no, skip. :Red of line?	LONGS LONGT:	MOV	CONTRACTOR OF THE	993
	GALL.	GET MAY STORE CHAN BYTH FIR CURS POS	: If yes, ekip. : Nier, store the ASCII character.				
	CALL		(Sphate curent,				(DIRNOTES ASM contin



It's ironic. These days, modems bring the world to you at the speed of light. But for all their awesome speed and power, these highperformance machines just sit there on your desk like a low-tech toaster.

But now, we're introducing the Migent Pocket Modern. It's 100% Hayes-compatible, so it works with virtually any PC: IBM, Apple, or whatever, It runs at both 300 and 1200 bos. It has a full set of Haves AT commands. A 28-character non-volatile memory. Remote ring and tone sensing. Busy and dial tone monitoring. And even dual phone lacks.

But that's where all similarities end. The whole modern is smaller than a 3"x 5" card and works on a 9 volt battery or AC power. So you can put it in your shirt pocket or briefcase, and take it home, on the road, or any-

where else you need your PC.

The Migent Pocket Modern. If you'd like to know more, send in this coupon or call 800-633-3444, Dept. 301, and ask for Alexis. We'll send you full information and the name of your nearest dealer. But in the meantime, you may be wondering why this modern isn't beige like the rest. Because we think it's about time a high-powered information machine looked like one

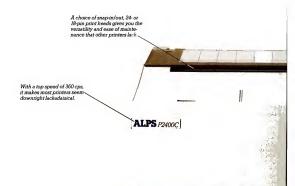
Pleasasend m Modern. And	e more informati send ma the nam	on abou	the My dealer	gent Pocket in my erea.
RAME			_	
ADDRESS			_	
CITY	STATE		ZIP	
PHONE	N	IIC	=	NT
Send to: Migent, I Incline Villege, Ne	nc ,865 Tehoe 8 vada 89450-60	lvd.,Ca B2, Atti	Box 6. n. Alexa	Oept. 301.

CIRCLE 384 ON READER SERVICE CARD



THE MIGENT POCKET MODEM. A STATE-OF-THE-ART INFORMATION MACHINE THAT LOOKS LIKE ONE.

ALL IT LACKS IS



But who needs competition when you've got all this?

Namely, the ALPS P2400C™ Dot Matrix Printer

No other printer in its class can do so much for so many for so little.

For instance, the P2400C can easily take For letters, seen color guaphics, on all the work an office and instance, and the seen color guaphics to the seen color guaphics to the seen and the seen and the seen seen seed to the seen and the seen and the seen seed to the seen and t

And take care of it faster. Thanks not only to its talents pointed

out above, but to its many others, as well.

Like a choice of draft, correspondence and letter quality print modes. A print buffer expandable to 256K. Multiple font cartridges. And full compatibility with the most

popular PCs and software.

COMPETITION.

Most printers lack the good sense to include a paper-saving, push/pull tractor for both bottom and rear feed. Not this one.

> You also get conveniences that many other printers are lacking. Like control of everything from the front panel, the feature menu, or from software—without using DIP switches.

Not to mention the ability to run quietly. At under 55dBA, the P24000C is one of the least noisy printers around.

One of the most durable, too. It comes with a full, one-year limited warranty. And if you give it normal care, it'll give you over five years of trouble-free performance.

Of course, there's nothing like a live performance to prove there's nothing like the P2400C.

For a free demo, or more information, call us at (800) 828-ALPS. In California, (800) 257-7872.

And see what every other dot matrix printer is lacking.



IT'S TIME YOU SAW THE ALPS.

CIRCLE 242 ON READER SERVICE CARD

P2400C is a trademark of ALPS Electric Co., Ltd. © 1967 ALPS Ameri

Introducing The Key Tronic 101. All Keyed Up And Ready To Go.



Now there's a 101 style keyboard that so reliable we back it with a three-year warranty. The KB 101" has the enhancements you want and the quality that has made Key Tronic the words leading manufacturer of keyboards. Best of all, it's immediately available through your favorite dealer for less than \$160.

The KB 101 works with standard and enhanced PCs, XTs, ATs and most compatibles. That's why it's the perfect choice for organizations who want to standardize on one board.

For more convenience in word processing and spread sheet operations, there's a separate cursor and numeric pad. So you'll easily move around in your document and enter figures with new speed and

new speed and accuracy.

Backed by a tbree-year warranty

See your Key Tronic dealer today. Or, for the source in your area, call 1-800-262-6006 between 7:00 AM and 3:00 PM Pacific daylight time. In Washington state, call (509) 927-5515.

Key tronic

P. O. Box 14687, Spokane, WA 99214, USA TWX 510 773 1885

■ PROGRAMMING/UTILITIES

	are	SHORT UPDATE	pand update screen.	watte	:*	AL.DE	Oet etetee.
PPEN_LIMIT1	HEY CHP da HEY JHP	BE BED OFFERT BE OFFER SUPPER-2 CE UPPER CUB OFFERT OFFERT I SHORT UPDATE	:See if beyond and of ret : directory listing so sell.		TEST Je MOV STOSE STI	AL.1 WAIT AL.HL	iDet stetue. zis it bigh? If no, asit until it is. pRetrieve Character; now it's OK i to write to screen buffer. Iletarrupts back on. Rump pointer past attribute. OR seat byte. Potture
Cosas:	510	8E,21*81			LOOP RET	DI SEXT_SETS	Dumy pointer past attribute. Det eest byte. Seturn
ID BEWOLL:	JAS MOV	SED SCHOLL ST. SE CUM OFFEST. ST UPDATS SCHOOL	(Update current offset.	This subree	1100 00	sere the screen. 1	
D SCHOLL:	CALL	CPOATS_SCREEN	.,,	CMI	HOY TOR	SIL FORMUL CIL, CIL	Clear eith original attribute.
This subrow and ead of	time eq mage. O	oils the bar if bet hereise the page is	men start merolied.		HOY HOY INT HET	DE. 186PH AZ. 80PH 18H	:Butire sormen. :Boroti sotive page. :Return.
POGA_BAR:	AZO BOY	51,108E 61,8P 8P,-81 51,483 SCHOLL PAGE 8P.8L	Get ourrent lime. Add requested lime. Assum below beginning. Le LYT	These subro	vilees :	Cisplay the mossages.	
	JE HEY	SCHOLL PAGE	If yee, coroll page instead. Do the same for end of page.	DOSPSAT_TEST		CURS POS, DE SET_CURSON	:Store requested cursor position.
	JAB ADD CALL	8F,81 91,FAGE END SCROLL FAGE CURS FÖR, OX HOVE SAR	iff in range, update cursor; end bar position.	CRT_TEXT:	CRP JR CALL	AL. S DED TEXT WHITE TEXT DROPT GET TEXT	(Sero marks end of string.
9064_PAGE:	CALL	SCHOOLS	; ent our position.	BHD_TEXT:	2007 362		
	PET			WOTH_TEXTS	PODE NOT INT POP	WY BOX	:0100 does not save SI. :Write teletype
		e the actual moving	1		POP	**	
DVE_BAR:	CALL MOV	TAG 1.190. 41	:Memowe cid bar. And move bar to new line.	These two o	ubrees)	nes nove the cursor as	d get the current directory.
	SET	SL, DIVERSE DAR		SET_CURSON:	POSK MOV TOR	DE, CURS. POS BY, BY	; Nave BI pointer; BION Scent.; Out requested ocreor position. ; Page mero.
EXT_BAR:	NOV NOV	DI.LINE DE.STATUS_BEG CE.I	:Retrieve lime. :Sar length 30. :Write one character at a time.		BOT DOP BOT	AT.2 189 81	
ar_son	CALL DEC JUE	HORB SET	(Write cas character at a time.	G87_25%:	-	NAME AND (00)"./-	:300 doese't preface directory ; with missh so we must.
	PET	HEXT_MAN			INC ION NOV	81 DL, DL AN, 47E 218	:Retrieve default directory.
This subrou	tiee at	tree the ASCII obers	iters. 1		827		
TORE_CRAR:	PUSH NOV NOV	AX SI COM COPPER AX COME FOR	Save character. Retrieve current sterting offset. Retrieve cureor position.	1		re stores the filename listance, bytes, date a	
	NOV NOV EDR DEC	CE, AB AG, AE AE, AE	(Seciete roe.	SELT STUNE	HOY SOORS	31,254 CK,12	:Foint to filename. :Store I2 bytes of filename. :Dot a byte. :Dot of filename?
		AX 01,AX DL,60 DL	:Add to source. :Multiply by 88.		15 15	AL. S SHO STORE STORE SYTE	The is the period?
	HCT ACO	DE AZ DE AZ	1866 to accome.		STEE STEE MOT	STORE SYTS CE.3	ilf ac, store. iBlue store 3 spaces.
	SHIL ADD	DI.1	:DI le erreen affect. :Adjust for ettribute. :Adjust for eterling in rew 3.		400 400	CE,3 SWORT WEST STORE	(Det sext bute.
	ENG.	CH, CH SI, CE CK, I	legiste column Add column to offeet Double for screen offset	27000_072:	NTGOOD		Store byte.
	ADD POP POP	DI,CH AY [SI],AL	:Add it- :Satrieve character. :Store it-	IND_STORE:	HOT BOT BOT	edit stone AL.32 etone	¡Det mext byte. ¡Pad beloece with spaces.
	CALL MOY NET	CX,1 WRITS SCREEN EPDATE FLAG,1	Displey by updating acreen. Fing as updated so file will be written upon Esc.	FILE_SIZE.	ASD RCY RCY RCY	DC.8 DE.OR:[164] AI.DE-[186] EI.18	:Save pointer. Worsto and of bytes field. Retrieve high and low words of bytes. Convert to decidal: d vide by 18
	tine er	tes the listing to	he ecreen. 1	MENT SIZE-	NTD	CT. TR	:Reverse direction.
This subrou		SI CUR OFFEET	(Setrieve starting offset. Point to row three of screen. 21 liese to write.		2080 2090 2090	DE, DE EX AX, CX EX	plow sord in CX. There is high baif. Convert to decise!. Retrieve low sord.
					A20	NT .00	:Betrieve remainder. ;Convert to affCII. ;Store it.
This school PEATE SCHOOL EST_WRITE:	MOVE MOVE MOVE MOVE MOVE MOVE MOVE MOVE	OF. 2 CE. 79 WOTTE SCHEEN	TO observators per line. Write them. Home pointer past er/if.		80066		
PEATE_SCREEN	MO'F MO'F	CE,70 WOITE_DOWNERS SI,2 DI,2 DE,EET WRITE	Write them. Storp pointer past er/if. Storp pointer to exit line. Storp colter to exit line.		800F 08 200	AI.CI CI.DI SEIT_SIDS	iAre so done?
PLATE SCHOOL	MOVE MOVE CALL ADD ADD DEC JUZ RET	WRITE SCHEEN SI,2 DI,2 DE SEET WRITE	:Sump pointer past er/if. :Sump pointer to east line. :Do sii II liese.		OS JOS JOS CLD POP	CE_DE 0527_5100	pare we done?
PLATE SCHOOL	MOVE MOVE CALL ADD ADD DEC JUZ RET	WRITE SCHEEN SI,2 DI,2 DE SEET WRITE	THE SEASON OF THE STATE OF THE	DATE	OS JOS JOS CLD POP	CI.DX SETT_SIDS DC.II DC.II DC.SO-[IO2] AI.DX	iAre so done? iIf so, divide again.
PLATE SCHEN	HOY HOY CALL ADD ADD DEC JUZZ RET	WRITE SCHEEN SI,2 DI,2 DE SEET WRITE	:Sump pointer past er/if. :Sump pointer to east line. :Do sii II liese.	DATE:	00 200	CI.DE SETT_SIMS DI.II DI.OS-[IN2] AL.DE	jare se done? jif so, divide again. jikask zo forward directice. jikesk pointer. jikesk pointer. jikesk pointer. jikesk pointer.

■ PROGRAMMING/UTILITIES

	MOY	CP'6	(Fing isolute leading merce.		STOSE		
	CALL	STORE WORD	;Store 14.				
	MOV MOV	AX.DE CL.S AX.CL	phetrieve date for last time.	i This is the	cell r	cutines. Check if notes file. Return to original	have been updated. 1 drive and directory. 1
	AND AND CHP	AX.7FH AX.00 AX.100	Mask off all but year. Adjust to ASCII.	ERROR_EXIT:	HOV	AH.0	:Display error message.
	28	AX. 190	ilf no. display. Elec. edjust for i next century. (Plenning sheed!)		CALL	RESTORE_PATH 2004	:Festore path.
DOSPOAY_DATE:	HOY DALL	CI.8 CH.32 STORE WORD	illisplay leading seros.	BEST	CALL	CUMB POS, 1799H BRT TEVESOR	:New 22: column V.
71MI:	1907	D1 .pe;(109)	Move to time field.		CHE	STTE PTH UPDATE FLAD, I NO WHITE SI INFEST SAVING	:Did we update notes? :If no. ekip erite :Dimieu "Erving 11892a7.
	MOVE	CL-11	ishift to hours bits.		CALL MOV	OFT TEXT 01. TOPPEST DIFMOTES GET TEXT	
	AND	AT JUL AT JUL AT	:Mark off all but hours.		MOV	DE COPPRET DIFFECTED	cise point to DIRROTES
	CHEP	AX.12 MENIDIAN	(Past nooe?		1NT	AH. NCH 21.K	:Fileboodie
PERTITION	CMP	AI.12 AI.0	:If wee, edjust. :Midnight?		MOY	CE, EPPRET BUPPER CE, END OFFIST	Point to the buffer
NOT_MIDWIGHT:	MOV	CL, SFFS	:If yee, edjust. :Suppress leading seros.		BUS MOV	CE.EE AN. 4000 211	(File eige.
	CALL	STORE_WORD	oftere 11.	ND MATE	CALL	RESTORE PATE	Festore default directory.
	904 904	AI.DE CL.S	(Retrieve time. (Shift to misutes bite.		CALL	CURS FOR, 0 SET_CURSON	:Some the ourser.
	AND	AI JPN CL.0	:Music off all but minutes.	PRINTERS_PATE		DL, CURRENT DIEK	Heart the drive.
	POP ROY	08.19 08.19	Notrieve Noure.		181	AN . OTH 2: H EX . OFFSET CHREST DIR	(Reset the directory.
	JAE	CN. 'A.'	(If so, AM.		187	AR, 589 21 H	
PMI	CALL MOV MOV	STORM WORD DOIL 'U'	Store It. Assume for now updated. Tech on corrigon return Linefood.			lanage buffer at and of	
	MOV	NYE PIN [80-48],13 NYE PIN [80-41],18	Move pointer peet note field	1	700 11	leaded editor at one of	1
STORE WORD:	BOY	6	: to etert of next record.	EURPOORT_DUR:	mger	CUMMINT_DIR+66	
B1049_#0401	ATO	CD.0	Convert to ASCII.	COOK ENDS.			
	012 0107	STORE IT STORE IT	ile it a leading serof				(DIRNOTES.ASM ends
ETCHG_1T:	STORY	AL.38	(Store delimiter character also.				(one to real time
	~//	A4.50	prove wearen our DALFECTOF \$180.				

ground color and the high four bits (4 through 7) control the background color displayed on your screen.

Of these two sets of four bits, three actually control the color. Three bits give a possible eight combinations (eight colors, including black). The fourth bit controls the intensity of the foreground color. When the intensity bit is on you get the second set of eight pastel colors. Bit 7 determines whether or not the character blinks. The whole attribute by the breakdown for the background and foreground colors is shown in Table 1.

The inverse of the screen attribute is used for the bort that highlights the note field. Displaying inverse video would seem at first slight a simple matter of exchanging the foreground bits with the background bits. To see what would happen if we did this, however, let's take the pleasant combination of darb blue on light blue as an attribute example. Binary 0001 is darb blue and 1001, the intensity bit on is light blue. Note that blue; interpretate on the plant of th

Background									Foreground						
7	1	6	1	5	!	4	1	3	1	2	1	1	1	ø	Ī
Blink	ī	R	ï	G	ī	В	ī	Intensity	ï	R	Ĭ	G	ï	В	i

Table 1: Bit Assignments for the Attribute Byte

For this example, we'll just assume a CGA, Now, if we just exchange the four bits, we will end up with 1001 0.001. That gives us a background color with the high bit, or blinking bit, on. We don't want those annoying blinking chancters on the screen, and we can't just turn the bit off, for that would leave us with binary 0.001 0.001—dark blue on dark blue, an invisible color combination no matter how much

Thus, what DOSKEY has to do, then, is to change only the three color bits. Of the several ways to do this, the easiest simply to XOR the attribute byte with 0111 0111. In the above example, there-

you twist the contrast knob.

fore, we would end up with

xon 0001 1001 dark blue on light blue 0110 1110 unit on orange

Yellow on orange may not be nearly as electric as the dark blue on light blue, but it certainly will get the attention we want for the bar. This same XOR technique used on the standard white characters on black background results in black characters against a white background.

OR	0200 0111 0111 0111	white on black	
	0111 0020	black on white	



At PC Magazine, we know how tough it is for you to sort out product claims, specifications and performance questions. It's not easy finding out what's new, better, faster, quieter, cheaper, more compatible or more expandable.

That's wby we're bere. And why your subscription to PC Magazine is the best way to stay on top of it all. Twenty-two times a year, our editors and columnists keep you fully informed about what you can expect from PC products-and which are best for the business tasks you have to accomplish. And every time you

need help solving applications problems, we're there to back you up. The most experienced and soughtafter editorial staff in the industry. Their credentials, plus the results of rigorous product testing that takes place in PC Labs-the only independent state-of-the-art testing facility in computer publishing-are your assurance that PC Magazine gives you all the facts.

Issue after issue is devoted to helping you buy PC products for your business with confidence and to making sure that maximum benefits are derived from that investment.

Whether you need to link your micro to a mainframe, evaluate graphics packages or upgrade your printers, we're here to help you do it all.

Subscribe today, Save up to 62% off the annual single-copy price of PC Magazine during our special introductory offer! One year (22 issues) only \$29.97-Save 54%

Two years (44 issues) only \$49.97-Save 62% Savings based on annual singlecopy price of \$64.90. For fast service call 1-800-852-5200 Toll Free

4Z171

■ PROGRAMMING/UTILITIES

| The content of the 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | | General Control Cont 482 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 |

200 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 181 | 184 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 11000
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010
12010 BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA A
BATTA B
BATTA A
BATTA B
BATTA A
BATTA B
BATTA



Developing a complex PC application with the wrong database has its pitfalls.

ny PC database manager can do simple applications and queries.

But when you want more complex applications, a limited product can be your downfall.

PC/FOCUS* is not just a database manager. It's also a true fourth-generation language with a complete set of developer's tools, including a screen painter, report writer, statistics, graphics, and micro-minimalnframe communications. Programmer

productivity gains are often ten to one, or more.

en to one, or more. Release 3.0

A Window on the PC And with Release 3.0, PC/FOCUS can be com-

pletely window-driven. You can use windows to program. Or create windowdriven programs. Or both.

In its table-driven mode, PC/FOCUS is superb for quickly developing prototypes for large applications. Yet it also has the programming richness and power demanded by advanced users. And they won't run out of memory, because PC/FOCUS breaks the 640K barrier with extended memory support.

It's Better with Data

And PC/FOCUS delivers real access to real data. In fact, you can apply the powerful data analysis tools of PC/FOCUS directly against a dBASE file. By communicating with FOCUS in a mainframe, PC/FOCUS can also access data from every important mainframe database manager, including DB2 and MBS.

And Multi-user PC/FOCUS is available today for all the major LANs.

We give PC/FOČUS the same support as its mainframe counterpart: local help lines in 12 regional offices, a

Release 3.0

Some new features of PC/FOCUS: Developers' windows

- ModifyTalk (simplifies the programming of database updates)
- Scripting Language (generates communications macros)
 Full-screen asynchronous
- Protocol converters
 Completely menu-driven user
- interface 3-D graphics

central hotline, and a national network of technical support and training centers.

Before you take another step, learn more about PC/FOCUS. Call 1-212-736-4433, Ext. 3700. Or write Information Builders, Inc., Dept. L7, 1250 Broadway, New York, NY 10001. We won't let you down.

Information Builders, Inc.

"Canw

■ Absolutely.
With TOPS; a PC and a
Macintosh" can really talk
together. Simply, transparently,
reliably. In real time.

reliably. In real time.

And now UNIX'-based computers can join the conversation.

TOPS has been extended to support computers from Sun Microsystems' and Pyramid Technology.**

And now TOPS for the Mac includes print spooling and file translators. ■ You can now access Microsoft[™] Excel[™] files from a Mac SE;" for example, modify them on your PC AT[™] under Lotus 1-2-3;" and save them on your Sun Workstation."

TOPS uses no central file server—every machine on the LAN can serve every other. Yet TOPS is so affable that file servers from 3Com! Novel!," Banyan" and AppleShare" can join right in.

According to InfoWorld and PC Week, TOPS is the easiest to learn and operate Local Area Network yet designed.

With TOPS you have your choice of LANs. Macs can talk solely to Macs, or PCs to PCs, or both can talk to each other or to UNIX-based computers. TOPS brings together parts of your office that until now were barely on speaking terms.



e talk?"

■ TOPS has over half the Fortune 500 companies talking. With good reason. Installation is quick and straight-forward—roughly four

straight-forward—roughly for minutes for a Macintosh and fifteen minutes for a PC. And this talk is remarkably cheap. TOPS is \$189 per Macintosh and \$389 per PC. ■ Our TOPS family is growing. With TOPS PRINT" (at \$189) all your PCs can share Apple's LaserWriter." And TOPS REPEATER" (also at \$189) allows you to expand AppleTalk" and TOPS networks.

TOPS for Macs and PCs, TOPS PRINT and TOPS REPEATER are available at Businessland and other fine computer dealers. ■ Call us at 800-222-TOPS (in California, 800-445-TOPS).

And we'll do just what a Sun workstation, a PC and a Macintosh can now do. Talk.

TOPS Network

an independent unit of





PROGRAMMING/UTILITIES

Preliminaries completed. DIRNOTTES starts reading in the filenames. This is done with the familiar DOS find frustrind starts reading in the filenames. This is done with the familiar DOS find frustrind filenames. The filenames filenames are considered to receive the information, which is then converted to ASCII and stored as a record in a buffer area at the cash of cock. For each filename area filenames, size, class, and time. Two spaces to make the start of the considered times are considered to the considered times it from the next filed of 38 characters reserved for the note. At the end of the data fields, a carrange restriptineted combina-

	12												- 1	2	
													+-		
4	ilename	- 1	size	- 1	date	1	time	U	1	SD	1	note	1	or/	11

Table 2: Fields in a DIRNOTES Record

to the printer. This creates a total record of 79 significant places plus the carriage return and linefeed.

The main reason for choosing this record length is that it allows us to move the cursor to column 80, one character outside of the bar, and then use the Backspace key to remove the last character in the field.

This is the easiest way to control the last character without the use of insert, delete, or word-wrap functions.

You've probably heard records and fields discussed primarily in reference to databases. All that is meant by a record is a string of data that share a common relation. Each record is then further divided

dBASE Power without dPAIN

WILDOUT APAIN
Why is dBASE so popular?
The answer is simple. Power.
The answer is simple. Power.
The answer is simple. Power.
The answer is simple. Power to manage your data,
users, and applications the way
you want. But power has a price
for fully harness dBASE you
must learn the programming
language. dBASE users call this
"Climbing the Wall."



If you're up against the Wall, take the express route, via an Adam Green dBASE Seminar.

FREE BOOKLET dBASE PERFORMANCE GUIDE Spring '87

A detailed comparison of: dBASE III, dBASE III PLUS, CLIPPER, QUICKSILVER, and FOXBASE+. Call or write for your FREE copy today. FOUR INTENSIVE dBASE SEMINARS Call or write now for a FREE brochure. Day 1 - dBASE Without Programming Day 2 - Introduction to Programming

Day 2 - Introduction to Programming Day 3 - Advanced Programming Day 4 - dBASE Compatible Languages

TAUGHT BY ADAM GREEN

A day with Adam

Green is like a month with dBASE.

Join the noted author and columnist in his seventh year of dBASE seminars.

COMING TO A CITY NEAR YOU Chicago Washington, D.C. September 14-17 October 26-29

September 14-17 October 26-29 New Brunswick, N.J. Los Angeles October 5-8 November 16-19 Boston, December 7-10

> Digital Consulting, Inc. 6 Windsor St.

Andover, MA 01810 (617) 470-3880 REGISTER NOW! ENROLLMENT LIMITED

MOVING?

Please write to: PC Magazine, Box 2445, Boulder, CO 80322. Include your mailing label from a recent issue of PC Magazine for faster service. Please allow up to 60 days for change

of address to take

place.

CIRCLE 338 ON READER SERVICE CARD

into specific data fields. DIRNOTES uses absolute rather than random length records. Specifically, each and every record. whether it includes a note or not, is 81 characters long. This makes it easy to find individual records. To find the start of a new record, all that need be done is to add a multiple of 81 to an index register.

A DIRNOTES record and the sizes of the individual fields in bytes break down as shown in Table 2. The information in each field is right justified.

THE WITCHES CALILDRON Once all the filenames are stored, DIRNOTES alphabetizes the listing using a simple bubble sort. The bubble sort is so named because it makes records of larger value in a list "rise" to the top. To illustrate, take the list of filenames: BALLOON, DEMI-GOD, AARDVARK, and CALDERA. On the first pass, DIRNOTES compares the first with the second. If the first is

found to be of greater value, that is, higher in the alphabet, their positions are exchanged. BALLOON is fine where it is relative to DEMIGOD, so the exchange is skinned and we go on to compare the next two elements in the list. This time DEMI-GOD is found to be out of place relative to AARDVARK, so the exchange is made. At the same time, a flag is set to indicate the list does not as yet seem to be in order. Next, the third position is compared with the last. DEMIGOD is now in the third nosition and is found to be out of place relative to CALDERA so these two are exchanged. The resulting order after the first pass is: BALLOON, AARDVARK. CALDERA, and DEMIGOD, DEMI-GOD has bubbled to the top or end of the

The flag is then checked to see if an exchange was made during the pass. If it is found set, and it is, another pass is made. This time we need only go to position 3,

since we know DEMIGOD is already in its correct position. During the second pass only AARDVARK is exchanged with BALLOON. The rest of the list is found to be in order and the list is now AARD-VARK, BALLOON, CALDERA, and DEMIGOD. The list is in order but DIR-NOTES does not yet know it. In the second pass, an exchange was made so the sort flag was set, indicating that all may not yet be in order.

Another pass has to be done to check that the list is correctly alphabetized. We do know, however, that CALDERA has bubbled to the top, so all that need be compared is positions 1 and 2. AARDVARK is found to be in the correct position relative to BALLOON and left where it is. The sort flag is not set in this pass, indicating no exchanges were made, so now DIR-NOTES does know that all is in order. There are faster sort algorithms, but this is the easiest to program and understand.



TurboC* and QuickC* Users Only \$9995*

ĽOOK & FEEL GREAT Get C-scape... 2.0 with Rook & Feel.!

C-scape: A breakthrough in fast and easy screen and keyboard interface management for C programmers. Create pop-up windows, pulldown menus, data entry screens, text screens, context-sensitive help, fully definable keystrokes, complete validation-develop professional-looking applications in quick turnaround, even

as a beginning C programmer.

Oakland Group, Inc. Q Call 800-233-3733 617-491-7311 675 Massachusetts Avenue nassacnusens Avenue oridge, MA 02139-3309

C-scape: The state-of-the-art interface management system preferred by professional C programmers and consultants worldwide is now available to newcomers to C at an affordable price.

"Incredible flexible: a very compact and fact interface for "Creatly reduces development tame—also allows portable code. The cost/performance is incredible. "S.M., Barranger

Look & Feel: A totally new WYSIWYG screen designer. Lets you design screens using the keyboard, then automatically turns each screen into readable C code that will compile on the

first run. Create menus and data entry screens, define fields of any type. Features automatic horizontal and vertical scrolling, line draw and erase. Includes context-sensitive help. Perfect to learn C: perfect for productivity.

Cocape and Look & Feel are trademarks of Oakland Group, Inc. Turbo C to a rest

Library: Includes pop-up, exploding, standard windows with "smart barders" and automatic scrolling, menus include pulldawn 1-2-3 type, and standard formats: everlapping windows: horizontal and vertical scrol ing, perfect for spreadsheet and data base cations: date, time, and money fun figns: a vast system for creating contextsensitive help, and more

Screen designer: The Look & Feel screen designer will have you producing fullyfunctional screens without writing a single line of codel Just draw, type, and convert to C. Also turns ASCII and Dan Bricklin Demo screens to C.

Manual: A professional, 470-page manual with extensive examples and a complete alphabetical reference section.

Device drivers: Drivers swappable at run time let your applications run on virtu ony hardware configuration—CGA, EGA (including 43-line mode), manachrome

Source code: Limited source code allows you to create your own, unique function library or modify existing functions.

Easy: C-scape is powerful, but easy to learn, easy to use, easy to customize, and easy to maintain.

ANSI C compatible: Fully. Options allow writing to screen memory directly or going through BIOS. 24-hour bulletin board: Great for support

and up-to-date information. No royalties, no run-time license: No need to pay more for your applications

Demo package available: See C-scape in action. Call now!

Ever want to blow up your computer screen?



Now you can with Data Display."
Your train-



never be the same. Simply place Data Display on any transmissive overhead projector, connect it to your computer's video port and turn it on.

Data Display projects crisp, larger than life, computer-generated images that allow for real-time manipulation of data—even in ordinary room lighting. And our true aspect ratio maintains the exact proportions as your monitor, so your pie chart doesn't turn into an egg chart.

We get along with everyone. Because Data Display has built-in RGB and composite video ports (no adapter required!), it gets along with IBM's and compatibles, Apple II's and any software they run. We also give you our own Presentation Partner³⁸ software to help you create dynamic presentations on IBM and compatibles. And at just 5 pounds you can take it everywhere.



The competition is heating up. Heat from overhead projectors can cause "dark spots" on other projection panels and ruin display image. But cool-running Data Display uses a highly efficient fan and air flow system to guarantee consistent screen quality. Place your chips on us.
Our state of the-art "chip on glass" technology actually bonds electrical circuitry to the Supertwist LCD panel for strength and reliability... replacing fragile, outdated printed circuit boards. That's why we give a full one year warranty and not the 90 day warranty you'll find elsewhere.

It's an open/shut case. For its features, Data Display is the best value available. And when you purchase before September 1, 1987, you will receive a free carrying case valued at \$69.95.

Data Display is available at computer stores everywhere. For the dealer located nearest you call . . . 1.800-582-2580. Within California, call 1.800-582-0852. Ask for Ext. 600.

CIRCLE 516 ON READER SERVICE CARD

COMPUTER ACCESSORIES CORPORATION
The Leader In Computer Components.

■ PROGRAMMING/UTILITIES

MATCHING Now that all is in order, the data file with our rotes can be read and matched up with the sorted directory listing. If no data file is found, DIRNOTES jumps directly to the display procedure. Otherwise the file is opned and read. Of the last 4,000 bytes of the segment, 3,000 are used as a receptacle that holds up to 37 records of the data file at a time. The balance of the memory is left for the stack.

The first record of the data file is compared with each filename in the directory listing. If the filenames match, the note accompanying the data file record is moved to the corresponding field in the directory listing. The same thing is done with the next entry of the data file. When the first 37 data file entries are exhausted, another batch is read in and searched for matches. Since only the filenames and not the size, date, or time are required for a match. notes for filenames of updated files will be preserved. Indeed, the program puts a "U" after the time field whenever a file has been saved later than the last time you entered a note with DIRNOTES, giving you warning that your description just may no longer be accurate. Naturally, if you delete a file from the directory, the filename

will obviously not find a match and any de-

scriptive note about it will be lost. Searching for matches is a simple matter when the records are of known length. Just add the record length to an index register and you can easily find the start of the next record to check for a match. In the original version of DIRNOTES. I tried using random-length data files in order to permit manipulation of the data file with a word processor. (The algorithm looked for the carriage return/linefeed as the signature for the end of one record and the beginning of the next.) The additional searching slowed down DIRNOTES so much, however, that the added flexibility wasn't worth it. DIRNOTES takes the extra effort to write directly to the screen buffer, and so provides lightning-fast access to any page of your directory. Slowing it down with the smarter random-length algorithm was like putting 10-inch wheels on a turbocharged car

Once all the data processing is done, DIRNOTES sits in a loop polling the keyboard via BIOS interrupt 16H function zero (Read the next ASCII character). This

BIOS Leyboard I/O routine returns with the scan code of the key struck in AH and the ASCII character in AL. If the ASCII character, DIRNOTES pass the character in the note field of the appropriate records in the note field of the appropriate records knows the notes have been cellifed. Again, since the records are of absolute length of 81 characters, it's simple to find the startegy of the character from the current curver position. The SI index pointer and the properties of the character from the current curver position. The SI index pointer the properties of the character from the current curver position. The SI index pointer SI plasts have always of the column.

The DI pointer is used in a similar way to address the corresponding position in the screen buffer that writes the character on the screen. Since for each character byte in the screen buffer there is an attribute byte, the multiplier is 160 (80 characters/row plus the 80 attributes) instead of the 81-byte length of a record.

When DIRNOTES is asked to scroll the screen, the current starting offset in the listing is moved a multiple of 81 and then, starting from that new offset, 21 records are written directly to the screen buffer. To scroll the bar, DIRNOTES first replaces the inverse attribute of the bar at its current location to the normal background attribute and then the inverse attribute of the source of the screen buffer. To some other than the screen are the screen and then the inverse attribute is moved to the new requested position.

All the requests, be they character entry or scrolling, are checked to make sure they fit in the boundaries. For example, notes cannot be entered past the 79th column and Backspace cannot go to the left of column 40. The scrolling boundaries are the start and end of the directory listing, When Esc is pressed. DIRNOTES checks to see if your notes have been edited, and if so, the data file is updated. The default directory

is restored and control is returned to DOS.

JIRNOTES was designed for productivity. The value of the notes is simply that with their aid you'll get fisster access to tright file. I think you'll find that, selectively used, DIRNOTES will many times repay the time it takes to add a descriptive note to the bare filename. And it will eliminate the frustrating questions, "What did! write in PAUL.387?" and "What does GETKEY COM doo".

Michael J. Mefford is a contributing editor of PC Magazine.



climb to the top, The Twin is your business lifeline.

Quality Spreadsheet Software

- 1-2-3® functionally equivalent Reads and writes 1-2-3® files Macrocompatible
- 150,000 users to date
- The Twin*: Now only \$99.

Get on the line for your nearest dealer: Call 1-800-422-TWIN



of Lotas Development Corporation
CIRCLE 363 ON READER SERVICE CARD

Keep your sensitive data under Intra-lock



Unauthorized access to PC's costs organizations untold millions of dollars every year.

The Intra-lock™ plug-in PC board is the most secure and versatile solution to data security available today. Intra-lock™ is currently available for IBM PC, XT, AT* and IBM compatible systems. Intra-lock™ works equally well in stand-alone and network environments.

Present software-based data security systems depend on passwords to protect your confidential information. Unfortunately, passwords are easily violated, either by using widely available "password-trapping" software,

or simply by poor password control.
The Intra-lock™ hardware device transforms ordinary, readable data into unreadable nonsense, without using a keyboard password.

Intra-lock™ uses the internationally recognized data encryption standard DES) developed by IBM. Data encrypted using Intra-lock™ can only be decrypted by authorized

persons using the correct physical key. As powerful as the Intra-lock™ technology is, Intra-lock™ is extremely easy to use...two simple commands will encrypt and decrypt your sensitive data with lightning speed.

M PC, XT and AT are registered tra ternational Business Machines Corp

KAME	TITLE
COMPANY	
COORESS	

INTRA·LOCK The PC data security solution.

ulstate Parkway, 10th floor, Markham, Onlano ada, LSR 6H3 0-263-304

nut automation Corp. 17 North Wight Brothers Drive, Salt Lake International Center at Lake Ciry, Usah, U.S.A. 84116 300-387-425

CIRCLE 264 ON READER SERVICE CARD

SPREADSHEET CLINIC



Parsing directory listings for sorting in 1-2-3; running DOS batch files and programs from inside Symphony; forestalling unwanted ERR messages; using spaced-out range names.

GETTING RID OF ERR

In 1-23 and in other spreadsheets, when you divide by 0 or try to calculate the square root of a negative number, you will get an ERR display. That can be useful, but it is also unsightly, in Figure 11 have written a formula that will prevent the ERR display. The formula in EL calls for driven multin in EL actually calls for the same thing but tests for the ERR condition before do the same than the same t

Jocel S.J. Natividad Saudi Arabia

ERR, like NA, will spread through a spreadsheet to every cell that references a cell with that condition. Mr. Natividad's formula shows how to avoid that problem, since subsequent cells now refer to a legitimate number, 0.

MANAGING FILES

It's easy to use 1-2-3 to manage disk files. Once you read a disk directory into a worksheet, you can use data commands to sort and search for filenames. The macro in Figure 2 does the hard part: reading a directory into 1-2-3 and breaking it into columns of labels and numbers.

The macro is designed to run on a twofloppy system, in which drive B: is the default data drive. (You can easily modify it to run on a system of any configuration.) Put the cursor where you want the list of files to appear, and run the macro. It begins by using the file manipulation com-

	С	D	E
3	50	8	+C3/D3
4	25	9	@IF(@ISERR(C4/D4),0,C4/D4)

Figure 1: A formula that turns ERR into 0.

mands (open) and {writeln} to write a batch file, EX.BAT, and then uses the /S command to exit to DOS. At this point, the user must type EX and hit Enter. This then runs the batch file, which redirects the output of a directory of the B: drive to a file on the B: disk called LIST. The file then runs the EXIT command to return to 1-2-3, and

the macro continues execution.

It now reads the newly created file, LIST, into the worksheet as text and then uses a format line to convert the resulting column of long labels into several columns of numbers and labels. The last two lines of the macro tidy up by crasing LIST on

the disk in B: and EX.BAT on the disk in A:. That happens after LIST has been created, though, so LIST appears as a file within your worksheet. Just delete it.

watant your workinger, lost oetice it. Now, if you sord inplashetically by filename, you can quickly see which files are duplicates and which are the most recent. If you like, you can sort by file size, date, and time since these are in separate columss, you can quickly delete any infermation you don't need. You can also bidd a column to the directory, where you can not which files to erase, move to another disk, etc. If you have many files you need to erase, sort them to the bottom or top of to erase, sort them to the bottom or top of

Figure 2: A macro that reads a directory from drive B: into a worksheet and then parses the file as numbers and text.

■ SPREADSHEET CLINIC

your list and add a column to the left containing the word "erase" or "del." Save this part of the list as a print file, with the extension .BAT. Then, once you're back in DOS, run the batch file and it will erase all the files at once.

Kurt Kunz Bismarck, North Dakota

For purposes of explaining how this macroworks, giving the nowly created disk file the name LLST makes things very clear. However, LLST is a filename you could alreastly how used for something clear You don't want to decroy that LLSTs. Create You create a new LLST, so in real file, I'd redirect to the PLST was in real file, I'd redirect to the PLST was consenting withly implantations of the consenting withly implan-

store.

It was the way this macro exist to DOS for user input and then resumes opening to use rings and then resumes opening as soon as the batth file returns control to 12-3. Short of using a kerboard macro program or wrapping the original loading of 12-3 into a barth file. I can't think of a way to make the batch file the macro crear execute automatically without keyboard input. Just think of the fin you could have if you could write a macro that execution that the store of the country of the store of the

RUNNING DOS UNDER SYMPHONY I recently became interested in using the Application function to execute DOS commands from within Symphony. As documented, you can use [Services] Atpplicamented, you can use [Services] Atpplicamented in other Application on the [Services] menu. The [Services] on the [Services] menu. The [Service

The DOS function is tremendously leastle and useful. At any time you can drop into DOS, execute DOS commands, or even nun other programs such as BASIC programs or 12-32. When you're finished, type EXIT, hit Enter, and you're back in Symphony, with your model just as you left it. You can even call DOS with a macrothat will resume execution as sony our term of Symphony. All this is hand, but I may want to per-

form functions automatically while in DOS without doing any keyboard entry ■ I've found a way to run DOS batch files, execute any number of DOS commands with macros, and return to Symphony without

intervention.

myself. Losus haso't compeletly neglected this, After the mater command sequence (Services) Application, Hrowke DOS's Applhone will prompt for a program to be run once DOS is called. At this point, you macro could specify 1/2-3 or BASIC or even PGRAPH (printgraph), and you would go directly into that program. Then, typing: "SYSTEM" in BASIC or quitting 1/2-3 would return you to Symphony. We way, you don't even have to use the EOS continued to the Committee of t

All of this is great, but there are some imitations. Suppose I want to copy non-Symptony files from one disk to another. If want, I can simply moveke DOS, and once I see the DOS prompt, I can type COPY A-". B. S-Clener-D. But what if I'd rather let a macro enter that command from with I compared to the command of the program to run? I'll get the error messages "Program Not Found." This I suppose, with any internal DOS command, such as DIR, TYPE, or COPY.

There's some logic to this, since Symposis looking for a program on disk rather than executing a DOS command distrather than executing a DOS command distrather than executing a DOS command distrather than the state of the stat

finally found a way to run batch files automatically from Symphony. It adds a few extra steps but lets you execute any numfor DOS commands with macros and return to Symphony without intervention.

The version of BASIC that comes with DOS 2.0 or later has a command called SHELL. This lets you execute DOS commands in much the same way that Symphony does, but without the limitations I've just mentioned. You can execute internal DOS commands and you can run batch files, after which you are returned unseathed to BASIC.

That's fine for BASIC programmers, but what does it have to do with Spromyny? As I pointed out earlier, you can run BASIC directly from Symphony when it prompts you for the name of a DOS program to run. And, by specifying a BASIC file at the same time (BASIC A filenamy, out can immediately run a BASIC program that contains the SHELL command that executes a batch file. The batch file. The batch file. The work the file. The work file. The work the file.

The BASIC program to run the batch file can be as simple as

10 SHELL "filename.BAT" 20 SYSTEM

The quotes in line 10 are required; line 20 simply returns you to Symphony. Please note, too, that both BASIC and the specified .BAS program have to be available on disk before you invoke the command.

To use this procedure, you must know the batch filenam and you must have created the BASIC program before you load-dymphony. There is one remaining hazard: you may execute a program that symphony there is one tremaining hazard: South and the control of the program of the control of the program of the program is you will be running before you incorporate them into a batch file road in the program you will be running before you incorporate them into a batch file road in the program of the program you will be running before you incorporate them into a batch file road in the program of th

how to use it.

David Gulliksen Stratford, Connecticut

Nice work, Mr. Gulliksen. If the next version of 1-2-3 comes out incorporating the same DOS interface, we'll all now know

Some laser printers handle charts better than others.

Before you buy an HP LaserJet printer, ask yourself one question. What if there's something better?



Because now there is. The new Destiny LaserAct I.

It's not a bit more expensive than the HP LaserJet Series II. But you

wouldn't know it from its performance.
First of all, it offers font for font
compatibility with the HP LaserJet
Plus line. So it runs all the software.

Even better, it has triple the standard memory. Enough, in fact, to print a full page of output in just one

feed. And with its built-in 300x300 DPI graphics and text capability, its output is nothing less than superb. The LaserAct Lalso has

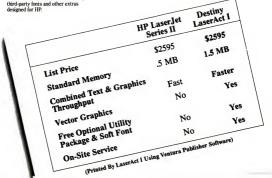
more to make every kind of user happy. Including vector graphics for CAD/CAM applications. Faster combined text and graphics throughput for desktop publishing. And a smart switch that lets you share the printer without using complex controls.

You get other user convenies, too. Like a free font in addition to resident fonts. A free tutorial diskette. Plus a full one-year warranty with four months of on-site service by TRW. Maybe best of all, you get a product designed and built by Destiny,
a company earning considerable
acclaim for producing some of the
finest values in peripherals and components for IBM PC-based desktop
publishing and desktop CAD systems.
The LaserAct I is available now
from Destiny. For more information,
call us at 1-408-733-3171.

And own a printer that's destined for success.



Sunnyvale, California 94086 CIRCLE 321 ON READER SERVICE CARD



only. If you already have range names,

you can't use /rnc to make such a range

name because hitting the Spacebar just cy-

cles you through the list of names you al-

ready have. However, you can make la-

■ SPREADSHEET CLINIC

CHANGING RANGE NAMES

Here is a quick and easy way to change the name of an existing range in 1-2-3. Start with /Range Name Create. When 1-2-3 displays the already-existing range names, select or enter the name of the range you want to change. Hit the Edit key (F2), change the range name, and hit Enter. The old name has now become the new name. Watch out for one thing, however: be sure not to change an existing range name to a name that already exists. If you forget and accidentally do this, the range name you wanted to change will simply be deleted, and the one you wanted to change it to will remain unchanged.

Ronald Dorchester San Antonio Texas This is actually not a bad little trick. While I was playing around with this technique, I rediscovered that it's possible to have

range names that are composed of spaces

 Range names that contain only spaces are

perfectly legal, although seeing a formula such as @max() or @avg() is admittedly a little disconcerting.

bels that are nothing but strings of spaces and give these names to the cells to their right with the Range Name Label Right command. As an alternative, you can use Mr. Dorchester's editing technique to change any existing range name into a space or spaces. Range names that contain only spaces are perfectly legal, although seeing a formula such as (a max()) or (a avg()) is admittedly a little disconcerting.

CONTRIBUTE TO THE CLINIC Share your latest spreadsheet discovery

through PC Magazine's Spreadsheet Clinic. We'll pay you \$50 for anything we print, plas an extra \$25 if you submit it on a disk. If you send a disk, please include a printout. Mail your contributions to Spreadsheet Clinic, PC Magazine, One Park Avenue, New York, NY 10016, Do. not use MCI Mail, however, since code is often mangled in transmission.



Generate Modifiable Source

Royalties BRUBAKER SOFTWARE

8825 N. County Line Road E. Lafayette, IN 47905 (317) 564-2584 30 Day Money Back Guarantee.

CIRCLE 207 ON READER SERVICE CARD

. GET 1



l et.lim Hoskins naineer on the rsonal System/2 development team. show you how to put PS/2's enhanced power and connectivity to work for your business...

- How to choose the PS/2 computer that's right for you Applications software—what's here now and
- what's in development How to link PS/2 to PCs, PC/ATs, PC/XTs,
 - and mainframes
- A hands-on look at PS/2 technology—graphics, communications, and the OS/2 operating
- system
 Over 100 illustrations! JOHN WILEY & SONS

\$19.95 At your local bookstore.

CIRCLE 301 ON READER SERVICE CARD



For people too busy to learn word processing. And too busy not to.

PFS:Professional Write is so easy you can learn it in an afternoon.

Professional Write's design is so intuitive. you may never need the manual. Pull-down menus describe all the functions, and on-line help screens are always available to handle your questions. There's no need to memorize special keys or search through confusing reference cards.

Essential features like the spelling checker, thesaurus and printing functions are only a keystroke away, to save you time and hassles. There's even an integrated address book that automatically inserts names and addresses into letters. And easy keyboard macros speed up repetitive

tasks like formatting reports, ending letters or typing standard paragraphs.

Professional Write lets you instantly trade documents with people whose word processors use the IBM DCA format. And you can import data from other PFS: Professional Series applications. It supports all the popular networks, too.

So if you think you can't afford the time to learn word processing, think again. Maybe you can't afford not to. Find out how easy it is. Just call for a free trial disk. and see for yourself as you actually create and

PFS:Professional Write.

print your letter with

For a free trial disk, call 1-408-848-4391, Oper. #14. PFS:Write owners, call 1-800-255-5550 for upgrade information.

How to replace your full 20MB hard disk.

- Buy new 40 MB hard disk.
- Buy 58 floppy disks.
- 3. Format 58 floppy disks.
- 4. Download files to 58 floppy disks.
- 5. Buy 58 more floppy disks and back up originals.
- Store in a safe place until Step 13.
 (If your PC has a tape backup system, substitute Steps 2A-5A. If not, go to Step 7.)
- 2A. Buy a blank data cartridge.
- Insert the cartridge in your PC's tape drive.
- Download files from hard disk into tape drive.
- Store data cartridge in safe place until Step 16A.
 - Dismantle and remove old hard disk.
 - Carefully note position of cables, mounting brackets, and setting of jumper pins.

- 9. Write down for safekeeping.
- Install new hard disk.
- Cross-check new hard disk manual for correct cable connections and jumper pin settings.
- Run DOS debug program to do a low-level format.
- 13. Run DOS partitioning program.
- 14. Run DOS format program.
- Load files from 58 floppy disks into new hard disk.
- 16. Store 58 used floppy disks in safe place until next memory upgrade.
- 16A. Download files from tape drive into new hard disk.
 - Store data cartridge in safe place until next memory upgrade.
 - Congratulate yourself on successfully filling up half of your new 40 MB drive with your old files.
 - Put ad in classifieds for old hard disk in perfect condition.

How to upgrade it.

- 1. Buy a 40 MB Hardcard." (Call (800) 826-8022 for nearest dealer.)
- 2. Slip it into a single 1"slot in your PC.
- 3. Run convenient installation program.
- 4. Congratulate yourself for adding 40 MB of new storage. And winding up with a total of 60 MB.

Plus Hardcard





Before You Invest in a LAN. Take This SimpleNET[™] Test.

Investing in a Local Area Network for your business can cost you a bundle, anywhere from \$2,000 to \$18,000 for a two and four PC system. And how can you be certain you're getting the most for your money

What's the solution? Before you buy. test the speed that a file transfers from one PC to another. It's a benchmark of how well the hardware and software

Try The SimpleNET™ Test Using two IBM®AT™ or

perform.

compatibles, one as user, the other as server: 1) Load a 100,000 byte program onto a user from a server system, and 21 Coov a 500,000 byte text file from the user to the server's hard disk drive.

We recently put our SimpleNET system, as well our competitor's systems, to this rigorous test. You'll be amazed at the results

In this head-to-head test, SimpleNET proved it has the best performance-to-price ratio of any other comparable LAN system, And when you consider SimpleNET's other remarkable advantages, there's really no contest.

SimpleNET's Proven Versatility

Each PC on the SimpleNET network is simultaneously user and server, with full sharing of any and all resources connected to each PC. Printers. plotters, data and disk storage get full usage by your staff on the SimpleNET network. Every PC is equal and there is no central file server to act as "hoss"

With a growing business, you can expand the network directly to 32 PC workstations without needing a repeater box. Full expansion can go to 256 PC'sl And you can connect the PC's together in any convenient way. Remarkably, you'll find no slowdown in the speed of data transfer.

You Don't Lose Data Because of Speed.

We've built in a sophisticated collision avoidance device (CSMA/CA) that detects potential collisions before data transmission, rather than after collision, as in many competitive

products

THE SIMPLENET LAN TEST*: 15.2 sec. 69.2 sec 8895.00 42.1 sec. 85.5 sec. 2,700,00 62 000 30 7 000 526.00 536.00 121 O sec 496.0 sec

SimpleWare* Makes SimpleNET Unbeatable

SimpleWare*, the software supplied with SimpleNET, provides NETBIOS interface to your system. This means that all IBM PC and compatibles can be run on any version of DOS 2.10 and up. Slightly less than 100 K bytes of RAM are needed for operation, one of the smallest network operating

systems. SimpleWare acts as a shell around standard DOS on each PC so that all network activity occurs as a background task. For example, you can be working on an application and still receive mail/messages, up to 15

separate transmissions, without interruption. You can save, forward or print these messages by accessing the SimpleWare menu at any time.

You can put up to four printers plus a modem to the system. The print spooler can handle a maximum of 128 different print files. Now that's

efficiency You can also password-protect your own files. Only those with the proper password can gain access to

subdirectories Two-Year Warranty Plus a 30-Day Money Back Guarantee.

> We're so confident of the quality and reliability of our SimpleNET system that we will replace any defective part within two years from the date of purchase. And if for any reason you are not satisfied, we will refund your money within 30 days.

introductory Offer.

SimpleNET (basic fouruser system) is only \$695, Includes user modules, 50 ft. cabling and SimpleWare. Additional user interfact module, only \$99 each. Price includes unlimited customer phone support

To Order Call 1-800-262-8010

(In CA Call 714-526-5151)



SimpleNET™ Systems Division of BCSoft Corpora 3261 North Harbor Blvd, Suite B Fullerton, CA 92635

CIRCLE 314 ON READER SERVICE CARD

CONNECTIVITY CLINIC



Tips on choosing the right hardware for small LANs with large databases, elevating PCnet's performance, finding modems for mainframe connections, and cold water pipe grounds.

SMALL LAN, BIG DATABASE

I regularly read that the hardware in a LAN is rarely relevant to the performance. As red Measurine put it recently, these are the one of the exceptions, it will be a small LAN, starting with four to eight workstations, but the server will have a database of approximately 10 megabytes and a text-base of approximately 10 megabytes and a text-base of approximately 10 megabytes, and a text-base of approximately 107 megabytes, but what will happen to system performance when I downkas a search?

Chaim Milikowsky Jerusalem, Israel

When you make a search, all other LMs activity could be supped, but not because of the size of the daubtase or the hardware. Our BMS is going to bind you more than the LNs hardware. Workstations inputting data have to lock records be forter they dank hardware. Workstations inputting the commot be read, so your searches might be transcated premature by anyone is inputing data while a search is being run. You should select your system faulth with your select your system hardware properties. The properties of the

If you must have a LAN, look at the latest version of PC Focus or wait for the upcoming LAN version of the Paradox DBMS. Workstations using these programs on a LAN cooperate at a level above DOS to share records.

Back to your original question about hardware. Everything will depend on the disk drives you use. I like the big, fast drives from Core International for network applications. The drives come with excellent software that patches Novell's NetWare and other networking programs to improve the integration of the disk drive and the networks.

IMPROVE PCNET PERFORMANCE?

We have a two-workstation Orchid PCnet LAN that we think is extremely slow. We have tried electronic RAMdisks and changing buffers without much success. We are considering buying Novell's Net-Ware/88. How much would that help?

Chris Trombetta New York, New York

I assume you mean you established a RAMdisk on the server and used it as a networked disk drive. This should have made the system sing. Your problems could include a bad network interface

Santa Clara Systems'
 Limited Advanced
 NetWare software is
 standard Novell NetWare

that is adapted for eight or fewer workstations card, DMA (direct memory access) conflicts, or simply slow software. See the next letter for a suggestion.

ADVANCED NETWARE FOR PCNET

In your answer to Mark Fischer concerning PCnet (PC Magazine, Volume 6 Number 10), you could have suggested that he replace the AST PCnet software with Santa Clara Systems' Limited Advanced NetWare software. This is standard Novell NetWare that is adapted for eight or fewer workstations and lacking a few features that are irrelevant to the typical small network (for example, no internetwork bridging). The advantage: it costs just \$795 (\$1,400 less than standard NetWare) and significantly improves performance. Limited NetWare is now fully supported by Novell, since Novell recently acquired Santa Clara Systems. We've used Limited NetWare with PCnet many times over the past 2 years, with excellent performance and cost-effectiveness.

James C. Van Pelt New Haven, Connecticut

Thank you for that information. Santa Clara Systems informs me that it still does a steady business in PCnet products.

NEED SYNC/ASYNC DIALUP

I have several users with two modems on their desks—one for synchronous and one for asynchronous operations. They have an A/B switch for the PC's serial port and must manually dial and switch the modem for synchronous connections to the host. I'd like to find a modem able to do both

PC-PLUS[™] The No-Nonsense Network

Unlike traditional LANs, PC-PLUS' on-the-bus architecture puts the computing power where you need it — with the data — inside the server.

PC-PLUS: The LAN Engineered for Shared Data

Any local area network can connect PCs. PC-PLUS, however, is engineered to optimize multiuser access to shared databases. We put a PC — or AT — on a card that plugs into the server. Putting your computing power on the same bus as your data. Giving same bus also your data. Giving your day and wide the server your root of the putting of the putting of the sing overhead that steals performance on most LANs.



PC-PLUS Gives You the Power You Need

Our plug-in cards come as 8 MHz PCs or 8 MHz PCs or 8 MHz ATs — to match your computing needs exactly. But the real test is in the results — and our benchmarks are second to none! Power to get your job done. Power to grow into new applications without sacrificing performance.

PC-PLUS is Easy to Install and Use

We put the computing engines all in one place — in the server. Not spread all over the building. The easiest software installation of any LAN, Use

PC-PLUS with your choice of AT compatible servers. Add a card and terminal to grow. Simple RS-232 data cables — no expensive rewiring with coax. You can often use existing telephone cable. Convenient packaged solutions, with preconfigured hardware and software.

PC-PLUS Runs the Software You Want

Our network operating software runs most popular software — like Lotus 1-2-3 and word processors. And the multiuser software that runs on Novell, IBM





dBASE III PLUS w/LANpacks, R:BASE System V, the SMART Series, Revelation.

PC-PLUS: Find Out Before You Invest

A local area network is a long term investment. Today's applications are just the beginning. Make sure your choice is ready for tomorrow — with mainframe connections, remote acceptage graphics and the power or growing database applications. Find out more about PC-PLUS today. Ask for our free 24 page brochure "Choosing the Right LAN," and get all the facts you need for a wise investment.



Corp., Novell in a trademark of Novell, Inc., IBM is a trademark of International Business Machines Corp., 200M in a trademark of 300M Corp., dBASE III PLUS is a trademark of Autoon Tate, ReBASE Systems V is a trademark of Microrium, the SMART SKRIES is a trademark of Innovative Software, Inc., Revolution is a trademark of CISMMS.

CIRCLE 345 ON READER SERVICE CARD 01701, (617) 875-6100, TWX: 710-346-0394

■ CONNECTIVITY CLINIC

jobs. The synchronous communications must use Bell 201C or 201B signaling because the data center is not going to change modems, and the asynchronous side should use Bell 212 or CCITT V.22 and the Haves command set. I can't find a company that offers both protocols and auto-dial.

John Stith Bohemia, New York

I can, John. Pick up the phone and call (205) 837-8100. That's the number for Universal Data Systems in Huntsville, Alabama. Ask about their Sync-Up line of modems. Sync-Up model 201/212 is an internal modem that does everything you want. UDS also has terminal emulation software for these modems that can do the entire job of making the connection and communicating with the mainframe.

DESKPRO 386 RUNS PC LAN

In Connectivity Clinic, under the heading "Turbos and Compatibles" in the May 12, 1987, issue (Volume 6 Number 9). you imply that the Compaq Deskpro 386 is not compatible with the IBM PC Local Area Network Program when you state that " IBM's PC Local Area Network

 Compag runs the bus on the Deskpro 386 at 8 MHz. The processor runs faster, but the bus stavs at 8 MHz.

Program won't run on any machine whose CPU runs faster than 8 MHz." Why, then, have I had so much success running a Compaq Deskpro 386 Model 40 on an IBM Token-Ring Network with PC LAN. Version 1.10?

> Anthony Schmidt Bay Shore, New York

Your success comes from two sources. First, you are running PC LAN, Version 1.10. Second, Compaq wisely runs the bus on the Deskpro 386 at 8 MHz. The processor runs faster, but the bus stays at 8 MHz unless you change it.

On a related topic, reader Benny Lane of College Station, Texas, wrote to tell us XT Model 286.

that IBM has a different version of the NETBIOS program for the IBM PC-XT Model 286 that allows its network interface cards to run with the zero-wait-state

You Need a Full LAN

□ Common database

sharing

- □ Application software sharing ☐ Information sharing
- ☐ Connection to minis/mainframes ☐ Simple/minimal peripheral

You Need a NetCommander

- sub-LAN The best printer sharing.
 - especially for laser printers Good peripheral sharing for
 - expensive high speed moderns and hard disks □ Affordable error-free file transfer
 - □ Gateways to minis and mainframes
 - ☐ Auto-install and pop up operations
 - ☐ Affordable, familiar, reliable RS-232 technology that works with any vendor's equipment
 - Call: 1-800-243-2333; in California: 1-800-247-2006. Ask for our booklet, "Networking and Printer Sharing: An Introduction.

NetCommander

Digital Products, Inc., 108 Water Street, Watertown, MA 02172 617-924-1680 NetCommander is a trademark of Digital Products, Inc.



CIRCLE 280 ON READER SERVICE CARD



2769

Chief Running Bull(dog) Says-"How Cheap-Um!"

GRAPHICS CARL	15
EVEREX EGA	\$185
EVEREX THE EDGE	189
GENOA SUPER EGA/SUPER	
EGA HI RES	255/295
GENOA SPECTRUM	159
HERCULES GRAPHICS	181
PARADISE EGA Auto Switch	335
QUADRAM EGA PLUS	289
SIGMA COLOR 400	399
NEC GB-1 Multisync	349
STB EGA PLUS	259
VEGA DELUXE	339
MULTI FUNCTION BO	ARDS
	EVEREX EGA EVEREX THE EDGE GENOA SUPER EGA/SUPER EGA HI RES GENOA SPECTRUM HERCULES GRAPHICS ORCHID TURBO EGA

PERSONAL SYSTEM/2 Model 30 w/2 floppy \$1305 Model 30 w/1 floppy & 20 mg.... 1769

Model 50...

Model 60 & 80. CALL XTs & ATs

IBM XT 286	\$1749
XT Systems	CALL
IBM AT 339	3495
AT Systems	CALL

COMPAO

386 Desk Pro 40/70/130 \$4699/5299/6399

286 Desk Pro

12 mhzCALL Compag II Model .2250/ II/IV.....

3350 Compaq III

20mb/40mb.... 3795/

4450

PC II TURBO XT 8 mhz, 1 floppy, 640K, AT style keygraphics card, mono monitor, DOS &

Color System add \$200 w/20mb add \$329, w/30 mb add \$359

CLUB AT 10 mhz. 1.2 floopy, 1 mb Ram memory,

hi res, monographics, monochron \$1295 monitor, clock calendar... Color system add \$200 w/30 mb add \$525, w/40 mb add \$595

LAPTOPS

\$1495 NEC Multispeed.... Toshiba 3100...... 2895 Toshiba T1100 Plus 1525 w/640K. 1695 Zenith 2 Drive....

2695

Zenith w/10 mg... AT&T SYSTEMS 6300

2 Drive System\$1259 10 mb System1495 20 mb System ... 1550 Upgrade to 640K Systems include Keyboard, Bit Image Graphics, Green Monitor,

256K DOS, and On-Board Clock AT&T Color Monitor 675

AST Advantage w/128K. \$329 AST Advantage Premium w/512K AST 6 PACK PLUS w/384K...... AST 6 PACK PREMIUM w/256K. 449 199 AST 5251-11 PLUS 615 AST FLASHPACK 289 AST RAMPAGE for AT w/512K 359 EVEREX MAGIC CARD II w/384K 159 EVEREX MINI MAGIC w/o K

FAST 88/V20 w/Switch INTEL Above Board for AT w/128K INTEL Above Board PS for AT

w/128K INTEL Above Board for PC w/256K 269 INTEL Above Board PS for PC w/64K

NTEL Inboard 386 w/Adapter. 1290 IRMA BOARD J RAM III for PC w/o K J RAM III for AT w/o K 489/589 J LASER PLUS PC/AT.

ORCHID JET 386 875 ORCHID PC Net Starter Kit. 735 ORCHID Tiny Turbo 286 ORCHID Ramquest 50/60 w/2mb 349 679

MICROSOFT MOUSE

w/PC paint brush..... MOUSESYSTEMS MOUSE 4119 139 OGITECH MOUSE 74 1050 KODAK DATA SHOWKENSINGTON Masterpiece/Plus ...129 MICROFAZER w/8K.... MICROFAZER II w/512F 129 POLAROID PALETTE PLUS 35mm EXPRESS 450 MATH CO-PROCESSORS

Sales Hot Line 1-800-438-6039

3241-E Washington Road • Martinez, Georgia 30907

Bulldog's Hunting Up Low-Flying Prices





\$199

449

515

PRINTERS	HARD DRIVES
EPSON	Seagate 10mb w/contr. ST213\$325
LX 800 NEW\$169	Seagate 20mb w/contr. ST225359
FX 86E 240 CPS, 40 NLQ299	Seagate 30mb w/contr. ST238379
FX 286E 240 CPS, 40 NLQ	Seagate 20 mb for AT ST4026
LO 800 180 CPS, 60 NLO429	Seagate 40 mb for AT ST4035
LO 1000 180 CPS, 60 NLO549	Seagate 40 mb for AT ST251
LQ 2500 324 CPS, 108 NLQ839	Seagate 80 mb for AT ST4096869
EX 800 300 CPS, 60 NLQ365	IOMEGA BERNOULLI
EX 1000489	10 mb w/card1039 10 + 10 w/card1495
OKIDATA	10 + 10 w/card
182 120 CPS229	BERNOULLI PLUS
192 Plus 200 CPS	SYSGEN Durapack single
193 Plus 200 CPS510	dual external/internal1850/1595
292 Plus 200 CPS, 100 NLO	Mountain 20 mb drive card499
293 Plus 200 CPS, 100 NLO649	Western Digi. 30 mb drive card
294 Plus 400 CPS1025	Plus Hard Card 40
Laser Line 61599	Plus Hard Card 20 625
TOSHIBA	Prlam 60 mb AT
321 SL 180 CPS, 60 NLQ499	Priam 43 mb AT 685 MODEMS
351 II 300 CPS, 100 NLO910	MODEMS
341E 180 CPS 72 NLO689	Everex 1200/2400109/209
351 Color 240 CPS, 100 NLO1069	Hayes 1200B or 1200 299 Hayes 2400 int or ext 449
NEC	US Robotics 2400 direct internal179
P6/P7 435/595	Ventel Half Card 1200 w/Crosstalk259
P5XL/P9XL985/1195	Vental Half Card 2400 w/Crosstalk369
3550/8850725/1020	Ventel 1200 Plus239
PRIMAGE 90	Ventel 2400 Plus
w/Pagemate III	MONITORS
90 CPS Dalsywheel1350	410\$145
PANASONIC	310-A 135
1080i\$199	Color 600S
1091259	Color 722 455 PRINCETON
1092319	PRINCETON
1592418	MAX12149
1595459	HX12 419 HX12E 469
HEWLETT-PACKARD	IBM

Crosstalk XVI	109
Crosstalk XVI	99
D Base III	399
Fastback	379
astback	89
oxbase +	199
Freelance Plus	339
FrameworkBM Display Write IV	399
BM Display Write IV	335
otus	305
Lotus Hal	105
Managing Your Money 3.0	123
Microsoft Word 3.1	245
Multimate Advantage II	110
Multiplan Office Writer 5.0	950
PFS Prof Write	140
PFS Prof File	150
PES 1et Choice	
PFS 1st Choice R Base System V 1.1	410
Super Calc IV 1.0	269
Sumphony 1 2	439
Symphony 1.2 Ventura Desktop Publishing	565
Volkswriter III	149
Volkswriter III Word Perfect 4.2	205
Word Perfect Library	59
Wordstar 2000 +	279
Wordstar Pro 4.0	249
TAPE DRIVES	
Everex 60 m b internal	\$550
external	635
Genoa Galaxy 60 mb internal	799
external	929
Achives 40 mb internal	359
Sysgen Quic 60 internal	949
external Sysgen 20 mb internal	99
Sysgen 20 mb internal	575
external	650
Taligrass 20 mb int/ext39	5/550
Taligrass 20 mb internal tape	001
plus 25 mb hard disk Tallgrass 60 mb external tape	99

\$209 ...399

Prices Subject To Change For Orders Call: 1-800-438-6039

\$2295 Mono 850.

3050

For Shipping Call: 404-860-6905, For Returns Call: 404-860-6899

Color Display 8512

Color Display 8513



Laser Jet..

Laser Jet Plus

Laser Series II

Incorporated as Georgia Micro

NFW VERSION 4.0 PRODUCTIVITY

■ CONNECTIVITY CLINIC

For IBM "PC's, XT's, AT's and other DOS machines This is the one you've heard so much about - with fast compile times, small object code modules, no royal-

ties, and clear error messages. Version 4.0 is based upon ANSI-74 standards with new features including:

. Multi-key Indexed files with up to 24 keys. This advanced feature requires the software package Btrieve which is optionally available . Windowing, pop-up's, color and overlays. This advanced feature requires the software

package Saywhat?[™] which is optionally available. ACCEPT numerics with decimal point alignment, numeric checking, AUTO-SKIP, SECU-

RITY, LENGTH-CHECK, EMPTY-CHECK . Fast memory mapped DISPLAY's (1, 5) ERASE, BEEP, ATTRIBUTE

 Level 88's - READ INTO - WRITE/REWRITE FROM - and DELETE. . An easy to use, COBOL source code EDITOR with auto line numbering, A-margin, B-

margin tabbing with full screen cursor control. Current customers can receive the new version by sending in their original diskette and \$30.00. This offer expires Dec. 31, 1987

Also available: Utah FORTRAN, Utah BASIC, Utah PASCAL, Utah PILOT, Bineve and Saywhat?1. Used by 50,000 professionals, students and teachers in 40 countries.

To order call: (702) 827-3030



IBM is a registered trademark of international Business Machines. Inc. Bineve is a registered trademark of Softcraft, in SAYWHAT? is a trademark of The Research Group. Utah COBOL is a trademark of Ellis Computing. Inc. I: 1987 Ellis Computing Inc.

GROUNDED CABLES

In a recent issue of Connectivity Clinic (Volume 6 Number 8), you advised someone with a potential radio frequency interference problem on a 3Com network to ground the EtherLink cable to a cold water pipe. You should never ground any piece of equipment to a cold water pipe or any earthing that is not directly bonded to the main grounding system that is part of the power distribution wiring. To do so will circumvent the correct short-circuit operation of the circuit breakers in that system. Roy Colglazier

Little Rock, Arkansas

After 25 years of grounding a lot of different kinds of equipment to cold water pipes. your letter came as a shock. We checked with 3Com's engineering staff and with in-

 After 25 years of grounding equipment to cold water pipes, your letter came as a shock.

dependent electrical contractors, and they don't understand your point. One envineer suggested that if the ground in the building's power distribution system should somehow become disconnected from earth ground, then a voltage potential could exist between the cable and the chassis. However, even this should be equalized by the bypass capacitors liberally installed on the 3Com cards. Nobody we consulted understood how connecting the cable shield to a cold water pipe could circumvent proper operation of the circuit breakers.

NETWORK YOUR QUESTIONS

Connectivity Clinic gives you practical solutions to network problems of all types. We'll pay you \$50 for any tips that we publish-olus an extra \$25 if you submit your letter on a disk. Write to Connectivity Clinic, PC Magazine, One Park Avenue, New York, NY 10016, or contact Frank J. Derfler, Jr., via MCI Mail (use the CON-NECTIVITY CLINIC box).

Code View? For Turbo Pascal?

T-DebugPLUS 2.0 brings powerful but easy-to-use symbolic run-time debugging to your fingertips -- the same power you'd expect to find in Microsoft's CodeView™. Debug Turbo Pascal programs faster with:

 Watch windows for variables Conditional breakpoints

· CGA, EGA & Hercules graphics

EDITOR'S CHOICE

"T-DebugPLUS is the most important Pascal tool ...since Turbo itself." PC Masszine, June 23, 1987

T-DebugPLUS is only \$60. Call toll free for credit card orders.

1-800-538-8157 x 830 t-800-672-3470 x 830 in CA Satisfaction Guaranteed or your money back within 30 days

Also from TurboPower Software: Turbo OPTIMIZER, e your compiled programs smaller and faster, only \$75. Turbo EXTENDER, breaks the 64K burrier, only \$85. Furbollower Unitions, only \$95 with source

For other information call 408-438-8608, 9AM to SPM PST. Shipping & taxes prepaid for US and Canadian customs others please add \$6 per stem. CodeView is a trade rough Corporation. @TurboPower Software, 1987 TurboPower Software 3109 Scotts Valley Dr., Suite 122 Scotts Valley, CA 95066

CIRCLE 119 ON READER SERVICE CARD

WHOLE EARTH ELECTRONICS WHOLE EARTH SOME OF THE PROPERTY OF THE PROPER



Complete plug-in-and-use system

The Confident Compatible. Superb workmanship. Assembled in our Berkeley California plant and lab tested to ensure quality and compatibility! Each computer gets a 48-hour burn-in.



Calls You Back" Whole Earth Access stores, well k throughout California, now sell the finest computer products nationwide. Wa provide total customer satisfaction at the lowest possible prices. Wa hava 400 employees, we perform over 10,000 customer transactions a week, we do over \$50 million business per year! In all, we have the ability and commitment to

take rare of our pustomers

Features Include:

Dust locks prends report FOULDITES. ITEL/IDUCE: ** 640K KAP** 150 New Domer Suph** (Eller Superiors Code)
 Foundation (Eller Superiors)
 Foun

FOR MORE INFORMATION AND ORDERS CALL TOLL FREE:

1-800-323-8080

For CA calls or customer support: 415-653-7758 WHOLE EARTH ELECTRONICS • 2990 7th Street • Berkeley, California 94710 Errors subject to correction

All returned status must be as new, not med label as receive a full credit, and must be ship defective products or sorts at no retificació r, with oil monade, womenly costs and pockaging intext. Returned some must beer a Whole Earth Electronics Assu-maned Primes call White Earth Electronics for more referration. ABOUT OUR WARRANTY: Whole Earth Elec-that the customer returns the princets, shipping project, in White Earth Access CIRCLE 528 ON READER SERVICE CARD

BSI HIGH PERFORMANCE PORTABLE COMPUTERS

Designed to bridge the gap between laptop end transportable models. BSI LCD Portable Computers come in 8088 end 80286-based configurations. Up to forty megabytes of hard disk storage and up to one megabytes of main

memory ere built in to deliver computing power equivalent to sophisticated desktop Five PC compatible expansion slots offer

expandability unsurpassed by leptops in the markat State-of-the-art supertwist liquid crystal display with back-lighting provide superb contrest and brightness, with readibility

approaching that of CRTs. BSI Porteble Computers are elso aveilable with high resolution 9" ember monochrome CRT displays that work with both monochrome

graphics or color graphics cards. Every BSI personal computer carry 10 Day Money Back Quarentee and is backed by One Year Limited Werrenty.

1-800-872-4547 Deeler Inquiry Welcome



LCD PORTABLE AT BASIC **SYSTEM \$2150**

- R02R6 CPU 6/10 MHz 640K RAM 80287 supported
- Parallet senal Real time clock
- calender One 1.2M8 Sopov drive • Herd

150 watt power supply

- drive/ Bopov drive controller
- · Buft in edepter for external color/ monochrome monitor Detachable AT keyboard

Basic System Plue 20MB Herd Drive \$2495 Basic System Plue 40MB Herd Drive \$2895

LCD Portable Turbo XT

- Basic System \$1525 9088-2 CPU, 4.77/8 MHz, 640K RAM
- 8087 supported Multi I/O card
- · One 360K8 floppy drive · Built in edapter for externel color/ monochrome mo
- Detachable AT keyboard

150 well power supply Baelc System Plue 20MB Herd Drive \$1845 Baeic System Plue 30MB Herd Drive \$1925

CRT DISPLAY PORTABLE AT BASIC SYSTEM \$1395

- . 80288 CPU 6/10 MHz 640K RAM 80287 supported
- · Real time clock-calendar · Monochrome Graphics card with Printer Port
- · One 1.2 M8 floppy drive · Hard drive/floppy drive controller
- · AT style keyboard 200 wett power supply · Optional second floppy drive, senal port
- sic System Plue 20MB Herd Drive \$1740 Basic System Plus 40MB Hard Drive \$1940

CRT Display Portable Turbo XT Basic System \$875



- 8088-2 CPU, 4.77/8 MHz, 640K RAM 8087 supported
- Multi I/O cord
- One 360K8 floppy drive Monochrome Graphics card with Printer Port
- · AT style keyboard · 135 watt power supply Optional second floppy drive, senal por
- Basic System Plue 20MB Herd Drive \$1195 Basic System Plue 30MB Herd Drive \$1295



HOW TO RUN A HARD DISK SYSTEM WITHOUT BACKUP.

Crossing your fingers is great when you're telling your mother-in-law you'd love to have her visit for a month. But, you are pressing your luck when you run your computer system without backup protection.

Crossed fingers won't help when a crash wipes out your data and you have to spend hour after hour trying to retrieve what has been lost, recreate what has been forgotten or re-enter what is gone.

But, a Cipher 5400 tape backup system can offer dependable security for that important data. Designed for today's high capacity disk systems on the IBM PC XT, AT and compatibles, The Cipher 5400 is available as a stand alone, self

powered unit offering 60 megabytes of fast backup and compatibility with such networks as Novell. The 5400 is completely read/write compatible with IBM's 6157 tape backup system. And, Cipher backs it with a two-year warranty and six-month warranty exchange program.* Best of all, the Cipher 5400 frees your fingers for more important tasks, like signing contracts and shaking

hands after a successful deal. So, why not uncross your fingers and use one to dial 1-800-843-3751, Ext. 9; or within California, 1-800-722-0670, Ext. 9, for more information about the Cipher 5400 backup system.

ER SAGO TARE RACKIR SYST

on at HBM PC NT AT and RBM 6552 are trademarks of IRM Companions. Coher is a Registered

Turbo POWER USER



Patching Turbo to beep after compiling and to eliminate the startup Y/N; automatic program saving; a new use for Preview; parsing strings into words.

In the Turbo Power User for Volume 6 Number 1, you showed how to make Turbo Pascal beep when it hits a compiler error. I made a change in TURBO.COM to cause a been every time it finishes compiling, whether because of an error or not. If you compile very large programs, it saves a lot of time if you can hear exactly when a compilation is complete.

Turbo displays the number of lines compiled when it finishes any compilation. To make it beep, I changed the "s" in "lines" to a bell character (07H). Figure 1 shows a DEBUG session for implementing the been in Turbo Pascal, Version 3.01A.

R. Dana Milnes Pittsburgh, Pennsylvania

I've been looking for a patch like this for my own long programs. Note that you should be able to use this patch on any version of Turbo Pascal. The "S" (for "Search") will find the word "lines" (in the example, Version 3.01A, the offset is 3993). Add 4 to that number to get the offset of the final "s" in "lines" (in Version 3.01A, it's 3997). Of course, you never patch the original of any program. Always make a copy and patch the copy.

UNUSUAL COMPATCH

TURBO is a terrific program development environment, but, like many others, I've found it frustrating to have to reply "Y" or "N" to the "Include Error Messages" prompt every time. I felt a command line parameter would be more logical, so I debug turbo.com -S 188 L 9AF7 "lines" YYYY - 3993

-ECS:3997 XXXX:3997 73.07 <== replace "s" (ASCII 73) with #7H

Writing 9AP7 bytes -quit

Figure 1: The DEBUG procedure for patching Turbo (Version 3.01A) to beep at the end of each

came up with a natch to TURBO.COM.

This patch allows you to specify the Y/N answer and the name of the work file at the DOS prompt so that you need not waste time typing it once you're inside TURBO. The DEBUG script file shown in Figure 2 works only with TURBO.COM, Ver-

sion 3.01A modifications. Unfortunately. I haven't access to other versions so I wouldn't be able to suggest the necessary changes in the script for them.

Carefully type in the script file using your favorite program editor and save it as PATCH.SCR, or just enter the command

COPY CON PATCH SCR

and carefully type in the file. The extra spaces between some lines are deliberate: be sure you include them. Next, place a copy of TURBO.COM and DEBUG .COM in the same directory as PATCH.SCR and enter

DEBUG < PATCH . SCR

DEBUG will whiz through all of the necessary modifications and return to the DOS prompt. The process leaves the original TURBO COM untouched and creates the new file, TURBY, COM. This is the natched TURBO COM Delete TURBO .COM and rename TURBY.COM to TURBO.COM if you wish.

TURBY.COM will accept Y or N at the DOS prompt as well as the work file name. Observe the following syntax:

TURRY [Y/N] | FILENAME, EXT]

As indicated by the brackets, both the Yes/No reply and the filename are optional, but if you want to specify the filename. you must specify Yes/No first.

The patch attaches itself to the very end of TURBO, at address CS:9BF7h. It makes an intrasegment jump from CS:100 to CS:9C05, the address of the new code. Addresses CS:9BF7 through CS:9C04 are used to store the filename of the work file.

The patched program retrieves the first parameter (if present) from location CS:005D of the PSP, the space reserved for default File Control Block #1, DOS automatically left-justifies and uppercases characters in this space. If a Y or N is

If You Use 1-2-3™. Microsoft, Word. or WordPerfect™

You Need PCEasy IITM

It makes them better! Now PCEasy II includes integrators for 1-2-3 ver. 2.01. Word 3.1, and WordPerfect Vers. 4.0 & 4.1. You then use the normal file rerieval command from the program to select a data file from PCEasy II's display of 32 character file names.

Finding and using data files from within applications has never been cas-

Allows use of thirty-two character

- file and directory names. Create meaningful file organization. Move, Copy & Delete Files from
- within an application Uses 70K or less of memory. Supports EGA, CGA and Hercules
- comis Maintains separate sorts and views
- for each sub-directory Simple point & shoot file selection.
- Pull-down menus. Function Key commands.
- Fast directory displays.
- File Peek from within applications. Change any file's attributes

SPECIAL PRICE: Overnight shipping and handling included in U.S., foreign add \$15.00. Orders shipped same day if received

before 1:00 PM Eastern time. To order Call:

1-800 423-0772 In Florida call 1- 305 276-1500

Visa, Mastercard or send check or money order to:

TranSec Systems, Inc. 220 Congress Park Drive Suite 200

Delray Beach, Florida 33445

Requires IBM® PC or compatible and DOS 2.1 or above with a hard disk

Registered names and Trademarks are the property of their respective owners.

■ TURBO POWER USER

N TURNT. COM

A 1-C65

A 1

[841C],A3 (8418/,83

AL,[SI+60] AL, 19 9C55 [DI+8BF8],AL

AL, [0075] AL, 20 9C7E EI,0000 CX,0003 DI

[DI+98P8] , AL

51 4L, 26 [SI+9070],AL

[DI+Sere].AL

AL. (51+9877) [DI+0420],A3

[#41C],AX

Figure 2: A DEBUG patch script for entering command line parameters like Y or N into TURBO COM

found, the response is stored in the keyboard buffer queue, starting at ES:041E. If you enter an invalid response, control transfers to CS:2D7C, where the program normally starts.

The second parameter (if present) is the filename, which is retrieved from location CS:006D of the PSP (reserved for default FCB #2). The program copies this filename to CS:9BF8 and adds the "." in the proper place. It also adds a "W" command that selects the "work file name" function in TURBO and appends a carriage return so that the name is entered automatically. The program then copies the reconstructed name to the keyboard buffer queue.

Once the keyboard buffer is loaded with the correct responses, control transfers to CS:2D7C, TURBO's normal starting point. But the command line parameters have been inserted into the keyboard buffer, and TURBO behaves just as if you had typed them in.

To automatically enter the Edit mode of TURBO directly instead of just specifying the work file name, change the byte at CS:9BF7 from 57h ("W") to 45h ("E"). Lawrence Spiwak

Melbourne, Florida

The usual program patch simply replaces one or more bytes in the original program with new bytes. It may change default colors, skip parts of the code by patchine in JMP statements, or eliminate commands by patching NOP commands over them, but the usual patch doesn't add new code. The unusual patch shown here illustrates a method for adding new initialization code to TURBO.COM.

To sum it up, you first Load (L) the original file into DEBUG. Next you Assemble (A) a new JMP instruction at CS:100-the very first instruction. The destination of this JMP is just past the normal end of the program. Assemble (A) your new initialization code, starting at that destination, and end it with a JMP 2D7C. (If you're patching a version of Turbo other than 3.01A, this final JMP should match the original code at CS:100.) Reset CX to reflect the new file size and Write (W) the patched program.

DOS automatically parses the first two command line parameters of any program

THE HARD DRIVE SPECIALISTS



Our kits come complete with all the components that you need to install a hard drive, including controller card, mounting hardware, cables, software, and illustrated manual

20MB MiniScribe, 85ms \$319 20MB Seagate, 65ms \$335 30MB MiniScribe, 85ms \$415 30MB Seagate, 65ms \$415



The ScribeCards by MiniScribe are shock mounted, fast-access-time hard drives mounted on a controller card.

Scribe 20MB, 68ms \$399 Scribe 30MB, 68ms \$429



Assured Quality 60-Day Money Back Guarantee



ATDRIVES.

Our AT drives come with data cable. mounting slides and manual for quick installation, Reliability is our guarantee.

Repular AT-20MB Seagate, 65ms \$295 30MB Seagate, 40ms \$485 40MB MiniScribe, 61ms \$429

High Capacity/High Performance: 40MB MiniScribe, 28ms \$579 71MB MiniScribe, 28ms \$879 40MB Seagate, 40ms \$495 80MB Seagate, 28ms \$895



EXTERNAL HARD DRIVES: External hard drives include high capacity/high performance hard drive, 45-watt power supply, and fan,

40MB MiniScribe \$698 71MB MiniScribe \$998 80MB Seagate \$1014

LIFETIME BACKUP UTILITIES Free with every Purchase, Bucks up, restores, compares you files safely and FASTI



BACKUP SOLUTIONS:

All of our tape backup systems sup-port unattended backups allow image and file-by-file backup, allow backups to multiple tapes for unlimited backup, and use rugged DC2000 or DC6000 cartridges. The internal systems fit in a half-height slot.

20MB Internal Tallgrass \$389 60MB Internal Wangtek \$749 60MB External \$827



CONTROLLER CARDS:

PC/XTFLOPPY/HARDDISK: From Xebec. Supports 360KB floppies and two hard disks. \$89 PC HARD DISK: From Western Digital. Supports two hard disks in your PC or XT. \$79 AT DUAL FLOPPY/HARD DISK: From Western Digital. Supports two 360KB or 1.2MB floppies and two hard disks.\$159

Lifetime Memory Products 12611 Research Blvd. #400 Austin, TX. 78759 National Sales Staff: 1-800-622-8001 Outside Tevas

1-512-335-8394 Inside Texas 1-512-335-7598 Technical Support

FREE

Orchid ... CALL

Memory

AMI ELEPHANT 10 & 12 MHz!!

BOCARAM ... NEW

NON Volatile EMS ... 359

Tall Tree ... LOWEST!

 JLaser+
 STOCK

 Laser GL
 .75

 LePrinl Extended
 .249

 Page Builder
 .350



■ TURBO POWER USER

PROGRAM Preview_Demo; VAR ST : String[68]; I,A : Integer; CONST Nine = 57; [ASCII code for 8] FUNCTION Preview : INTEGER: BEGIN INLINE \$88/\$40/\$00/ AX.48h \$1E/ \$8E/\$D8/ PUSB DS.AX AGAIN: CLI HOV BX,buffer_head CMP BX,buffer_tail \$PA/ \$8B/\$1E/\$1A/\$86/ \$3B/\$1E/\$1C/\$68/ SFB/ \$74/\$F4/ AGAIN \$88/\$87/ AX, [BX] 610/ \$89/\$46/\$84); [BP+#4],AX WriteLn('Enter text or numbers. <Esc> to quit'); REPEAT
A := 0; ST := '';
I := preview. I := preview; IF Lo(I) IN [Sero..Nine] THEN Reed(A) IF Lo(I) <> 27 THEN ReadLn(ST); WriteLa MriteLn('Previewed ASCII code = ',Lo(I),', Scen code = ',Hi(I));
MriteLn('A-',A:5,' ST="',ST,'"');
MrIL BI(I) = 1;

Figure 3: A way to preview a key in the keyboard buffer.

into these two spaces. However, since FCBs do not support pathnames, these FCBs are rarely used. Mr. Spiwak has found a clever use for them in his patch.

FAKEMAIN

I've often lost Turbo Pascal programs because I failed to save them before running them. I made a mistake, and the computer locked up. If I had remembered to save the program first, I would have avoided spending hours of work rewriting it.

I found a way to make Turbo Pascal save your program automatically each time before it is compiled. The trick is to fool the compiler into finking the work file and the main file are different. Inset extra the contract of the main file, but add an extra character (e.g., TEST_PASS), the notice the same name for the main file, but add an extra character are grant programmers, but DOS removes the extra character and interprets them as the same filename. When you compile the main file before controlline. When you compile the main file before controlline. When you

press Edit, it will reload the work file and go into the editor. This wastes time saving and loading the same file, but it gets the job done and can save hours of work if your program hangs and you have not saved it. Carl Smith

Bloomsburg, Pennsylvania

A nice trick if you tend to blithely hit Run (R) without saving your program first. It could save your sanity.

PREVIEW

The function Preview waits for a keypress and extracts the character from the keyboard buffer directly, without removing it. My principal use for this function is to allow alternate input types without interfering with the normal Read routine, as, for example, in a case where numeric input is normal but the user can enter "0" to quit.

The sample in Figure 3 demonstrates the power of Preview. If the first key struck is numeric, entry goes into the Integer variable "A". Otherwise, it goes to the string variable "ST". Preview returns

Microsoft QuickBASIC 3.0's speed was verified by an indisputably independent test.

BASIC Benchmarks Comparison								
Sleve:								
+ 25 Iterations/1,509 Protes	Turbo BASIC	QuickBASIC 2.0						
Graphics: (Screen Mode 8 - EGA)	3 241	3.023						
Draw 500 Circles								
	5 124							
	11.422	4.720						
	10 596	5 051 5 968						
		0.968 4.949						
Fill 200 Circles	15.766	5.551						
Math	7.689	6.431						
* Integer Math								
	4.284	4 230						
	8 184	1.805						
- reside suscisiou EXb	15 599	4 887						
Metrix Operations:	13.731	3.742						
Borison's Tour								
Microsoff's Test	0.714	0.055						
Bubble Sort (1,000 Integers)	34 328 2 854	4.781						
File I/O:	2 606	2.477						
• Sequential (2,000 records)								
Random (2,000)	21 695							
Text I/O	52 234	7 531 51 078						
		31.076						
Secreen Mode 0 (5,000 characters)								
Screen Mode 1 (5,000 characters)	0 934	1.750						
Screen Mode 2 (5,000 characters)	9.447 4.339	8 006						
	47998	4.070						

In the May 5, 1987 issue of PC WEEK, some interesting bench-

marks were published. We won virtuall all the tests, but one test in particular caught our attention: the competitor's. Now even they have to agree we're faster.

Microsoft* QuickBASIC 3.0 gives you the fastest execution speed. It also lets you write code faster. That's because you pick up speed working in an integrated programming environment which includes our unique integrated debugger.

With our debugger, you can view source code and program output simultaneously.

And you can see the contents of variables while your program is running. Even set dynamic breakpoints.

Get your hands on Microsoft Quick-BASIC 3.0 Right now, well make it easy because we're offering a \$20.00 rebate? And to be sure that you're satisfied, were offering a 30 day money-back guarantee. So there's no better time to do some independent testing of your own.

■ TURBO POWER USER

both the ASCII code and the scan code of the character in the buffer. To end the demonstration, I test for a scan code of I, the Esc key.

> Donald R. Winslow San Pedro, California

Without this function, it's rather difficult to allow reading of different types of variables at once. The usual approach would be always to read a string variable, and then convert it to a numeric type if appropriate. You may find other cases in which it's handy to read the next key pressed without first removing it from the keyboard buffer.

PARSETRICK

Here's an easy way to parse a string into substrings (words) separated by blanks. It uses Turbo Pascal's ParamCount and ParamStr functions. Start by declaring the variables shown as (a) in Figure 4.

(a)

UAD SimulateCommandLine : String[127] Absolute CSeq:\$88;

(b)

SimulateCommandLine := StringVariable; For I:=1 to ParamCount Do WriteLn(ParamStr(I)); { or whatever you want to do }

Figure 4: The variable declarations (a) and code (b) for parsing strings.

The variable SimulateCommandLine | occupies the same memory space as does the command line. If you fill the variable with a string that contains words or substrings separated by blanks, then the code fragment shown in Figure 4 (b) will parse the string.

This certainly is a lot less work and is more efficient than building a procedure or

function that looks for embedded blanks and returns substrings. You can use this technique with different delimiters if you first make a pass through the string, converting them into blanks. However, the significance of having different kinds of delimiters is then lost.

> Douglas Schenck Florissant, Missouri

KNOCK THE SOCKS OFF YOUR PO

SPECIAL OFFER: \$71.80 value for only \$44.85 - Pay \$44.85 plus shipping for 3 DOS Disk Sets. Select a 4th one free. Dozens of programs (a whopping 6 megabytes) on 12 compressed disks equal 24 disks from other distributors. Bonus — free Software Directory plus next Update. Offer good through 12/87.

UNMATCHED VALUE - Take advantage of best rated, most up-to-date Public Domain & User Supported Software for PC-DOS & CP/M. Over 3,000 programs in our fast growing library cover all applications. Our disks contain 200% more software because they are filled and files are compressed. You won't find a better price per program

SUFTWARE DIRECTORY — Categories & clearly describes all programs in our library and all Duk Sets. Shows 150 DOS & CPIM
disk formats that we support. • DOS DISK SETS — Each or has THREE, 1605, 50° TOS disk filled with the best programs for a
popular BMAC applicant OIS nepployers after the decompression. Some program require color puphos.

The private of the programs of the decompression of Some program require color puphos.

The private of the programs of the decompression of the programs o

- business, planning, investing & personal applications.

 ACCOUNTING General ledger, check, payroll, receivables
- DATABASE dBASEII/III routines plus stand-alone database list program mailing list programs.
 GRAPHICS — Draw charts & pictures. Make slides & banners.
 WORD PROCESSING — Processors, editors, formatters, tools
- of Dak Sets ____ @ \$14.95 per Set. Add \$4 USA/Canada, \$12 elsewhere (per order) for shapping. nnted Software Directory - \$6.00 Add \$2 USA/Canada
- \$4 elsewhere for shipping 6% Sales Tax if shapped to NJ 5 □ Visa □ MC □ Check □ TOTAL 5 Address _ Ciry/State/Zip __ Card # ____
- Orders Only-Toll Free: 1-800-553-0456
 - Multipath, Inc.

- writers, form generators.

 PRINTER UTILITIES Print sideways, buffer, spool, get let-
 - □ SCREEN & KEYBOARD UTILITIES Increase speed,
 - change colors & fonts, define keys, scroll text. DOS UTILITIES Shells, help, RAM drives, diagnostics, memory managers, extensions, concurrency.
 FLOPPY DISK UTILITIES - File copiers, catalogers, speedups,
- HARD DISK UTILITIES Manipulate files & directories, backup, recover, defrag-PROGRAMMING TOOLS - For BASIC, Assembly & Batch
- ☐ FOR THE HOME Check balance, budgering, asset management, geneology, ☐ SCIENCE, ENGINEERING, MATH — Curve fitters, equation solvers, statistics,
- EE, physics, astronomy, surveying. EDUCATION Math, history, spelling, science, geography lessons & games. MODEM PROGRAMS Up/download Xmodem, Kermit, ASCII. Operate PC
- CASINO, BOARD & CARD GAMES Dozens of skill & chance games. ARCADE GAMES — Dozens of action games.

 MUSIC — Dozens of tunes. Tune trivis. Compose/edit music.

 RELIGION — Church member, fund raising & sermon database management
 - stems. Bible quittes & word games. CIRCLE 312 ON READER SERVICE CARD

Box 487, Montville, NJ 07045 (201) 575-5880

ccountants are learning it is simpler than ever to automate accounting with flexible non-modular NewViews from Q.W.Page. They appreciate the convenience of working directly on accounting documents and expanding to lower levels for more detail. They are learning how easy it is to create consolidated statements for branches and profit centers; learning that they don't need to create trial balances or close their books; learning what they knew all along...that accurate, up-to-date financial information provides business solutions.

The visual approach to traditional doubleentry accounting makes NewViews different from all other accounting systems.

NewViews is exciting software. For the first time. non-accountants can really understand accounting and talk with their accountants. Businessmen can see the whole picture, or any part of it, instantly. There is no better framework to learn, understand and use accounting.



documents. The same simple commands give you complete access to all levels of the hierarchy. To create a report add a line to a company. Accounts are added to reports. Transactions are added to accounts. When you enter transactions, corresponding items are automatically added to balancing accounts. Reports are updated instantly and the books always balance. Keep this picture in front of you and call for a "phone demo."

(416) 923-4567

Free Seminars

Call now to reserve seats at a free NewViews seminar near you. They are held requiarly in over forty cities across North America.



NewViews unifies accounting functions with the visual approach. There are no separate modules to buy. CIRCLE 104 ON READER SERVICE CARD

NewViews

"I'm hierarchical, and so is NewViews, It just makes sense when I see all those transactions happening in real time. If makes serse to others, too NewViews is finding favor in college-level courses that sech accounting, it's kind of like a cutaway view of how accounting really works. That's why PC Magazine gave NetWiews an Award for Technical Excellence.

Bill Machrone, Editor PC Magazine



Unlimited telephone support is provided at no charge. Training is available at Authorized Training Centers

NewViews



Now your office PC can do

this job faster.

MicroFax by Datacopy lets PCs send documents worldwide.

In less than 60 seconds, you can send and receive documents anywhere in the world, without leaving your desk. MicroFax by Datacopy makes it happen.

MicroFax is the ultimate desktop communicator. A simple add-on board for PCs and their compatibles, it communicates with fax machines or PCs over ordinary voice-quality phone lines. Your computer can generate the documents. And your printer can do the printing.

What's more, you can keep working because MicroFax does not tie up computer time; it runs in the background. Even when you're not there, MicroFax can be programmed to send or receive 24-hours a day. You can deliver to 160 destinations at one time. And MicroFax maintains complete activity records.

MicroFax combines the virtues of a dedicated fax machine and a PC modem at a fraction of the cost. Better still, MicroFax is by Datacopy, who pioneered the technology.

So get your hands on one. And stop handing your documents to someone else.



■ TURBO POWER USER

I used Mr. Schenck's clever trick to create a tiny parsing filter program shown in Figure 5. The {\$P1,G1} compiler directive causes it to read from Standard Input and write to Standard Output. The input might come from the keyboard, or from a file, or even-via "piping"-from another program. Compile the sample program as PTRICK.COM. Then the command

PTRICK < filename

will write a whole file to the screen with one word per line. That's not so useful in itself, but consider this command:

PTRICK < infile | sort > outfile

The result of this command is an output file that contains all the words in the input file in sorted order. You could compare this file to a dictionary file, or use it to generate a word-frequency count. And thanks to the ParamCount trick, the parsing program is elegant and tiny.

{\$P1,G1,R+} PROGRAM Parse:

BEGIN

VAR SimulateCommandLine : STRING[127] ABSOLUTE CSeq : \$80; : Integer;

WHILE NOT EOF DO BEGIN

ReadLn (Simulate CommandLine); FOR I := 1 TO ParamCount DO WriteLn (ParamStr (I)); END: END.

Floure 5: A parsing filter using Turbo's command line parser.

SHARE YOUR TURBO POWER Tell the world about your latest Turbo Pas-

cal programming and applications tips through Turbo Power User, and we'll pay you \$50 for your trouble, plus an extra \$25 if you submit it on a disk. If you do send a disk, please include a printout of your submission to ensure against possible damage

in transit. To prevent possible errors, do not use MCI Mail.

Mail your contributions to Turbo Power User, PC Magazine, One Park Avenue, New York, NY 10016.

Neil J. Rubenking is a professional Pascal programmer.

1200 Baud Wall Mount Modem

Capetronic

The QT-1200 is a 1200/300 basel modern with

S-222 effertace for use with most personal salers. The unit combines LSI micro-steers with advanced digital demodulation iques to produce a modern that allows n vitto a full telec system. The Capetronic 01-1200 is equipped with features that are unavailable in any other

mearably priced mod . Auto-sasswer and Auto-dal

 Programmable intelligent Glaling Accessible time base Help convrands

Touch-Tone and pulse daing · Built-in speaker with volume control • 100% Hayes compatible Rell 2128/103 compatible

Regular retail \$199

HUBDISK COMPUTER PRODUCTS INC. 406 Merket Street, Brighton, MA 02135 (617) 254-6180

12" TTL Monitor Capetronic

> · High Resolution . Tit & Swive Base

· Cable Included · Available in Amber, Green or White.

\$79

SONY 3.5 DSDD

· Duplicator Grade · Lifetime Warranty

· Available in Blue or Beior 10-50 1 29 51-99 1.19

100+ 1.09

CALL TOLL-FREE 1-800-637-DISK

Diskette Storage \$595

Store 75 514" or 40 31/2" diskettes in this sturdy storage case "Quantities Limited"

> 51/4" Diskettes 29¢

Double sided/double density, 48 TPI, duplicator quality, exceeds industry standards by more than 80% from a major U.S Manufacturer.

Diek Optional add 40 Tyrec Steeves Paper Steeves Color add 200 (Choose from medium blue, life blue, green, velow, crance, red margon, brown, gray, ender or white) AT 12 Megabyte Capacity a64 700

SMTC NO-SLOT XT CLOCK**

Description
The SMT No Sort XT Clock as a real time
The SMT No Sort XT Clock as a real time
clock/delender to be used in the BMT XT and
compatible completes. It is the only, clock/
calender available that clock not report use of a
sist or needless manuplation of the CPU. The
No-Stort XT Clock is quotify and easily installed. Ne-ser XT Clock is quotily and easily installed on the system motherboard in any of the axiality 28-pin EFROM societis. If no empty societ is available, simply remove the Phirms from a full sociati, install the No-Siot XT Clock, The replace the Pinen that was in the societ onto the back of the No-Siot XT Clock. The No-Siot XT Clock proteins of betterning and is quaranteed. XT Clock contains 2 batteries and is guaranteed to keep time for a full 10 years. The SMT No-Sigt XT Clock carries an extended 10-year "No Sweat" warronty

 Does not use any slots
 Maintains time for more than 10 years in the absence of power

Keeps track of hundreditis-of-seconds, seconds. mytes hours, date, month, and year Supports leap year
 Typically accurate to within 2 minutes/year

 Installs assay in the motherboard or option boards of any ISM XT or compatitive computer with a 28 out From socke Special Price \$45

NEW! XT-289 Speed Card thes a short sw B K8 Hoh Speed 0 war Cache Memory \$31999 Introductory Special

ofter July 15th 491 West Mein Street Avon, MA 02322 (617) 580-1379

CIRCLE 287 ON READER SERVICE CARD

□ ■ NETWORK America's Favorite

Business Software for the IBM, PS/2 and compatibles

LOTUS 1-2-3

DBASE III+ WORD PERFECT \$385.00* \$185.00* (5.25" or 3.5" Formats Availa

orland Rofley rland Turbo Projog Toolbox Borland SuperKey or Turbo Graphics Toolbox **PGS** Fastback Lotus HAL Report Water

53.00* 38.00* 82.00* 91.75 Microsoft Quick Basic 3 0 or Windows 55.08* Microsoft Word 3.11 180.50

Your #1 Source for Chips

64K IBM" 150ns/Set of 9 \$13.05*

nois call (312) 280-0

PERSONAL COMPUTER NETWORK

Please () all boxes that apply

With Optional 14 Days Rental of

With Optional 30 Days Rental of BOTH BUSINESS AND GAME

Exp. Date mon. _____ yr _

Check or Money Order Enclosed for \$

My Computer(s) is: | IBM | IBM XT | IBM AT

Apple II ' Macintosh Other,

Gegruture required to volctive membership in profit time to be taken for Su

Business Software Rental Library

Games Software Rental Library *Special V.1.P. Membership

Software Rental Libranes

OR CUSTOMER SERV

duaranteed

• Rasic Membershir

Account Number

Address ____

Telephone (

Signature ____

City ____

-

8am-6pm 👼

PC NETWORK MEMBERSHIP APPLICATION

YES! Please enroll me as a member in the PC NETWORK" and

exclusive, money-saving services available to Members. I am under no obligation to buy anything. My complete satisfaction is

> 1 Year 2 Year

\$8 \$15 \$25 [] add1 per year

1 Year 2 Year

\$15 \$25

\$10 | add l. per year

\$30 [, add], per year

Art No.

Zip

send my catalog featuring thousands of computer products, all at just 8% above DEALER WHOLESALE PRICES. I will also receive JUST 8th above DEALER WITCHESTILE FRILES. I was used as THE PRINTOUT. a special periodic update on merchandise at prices BELOW even those in my wholesale catalog and all the other

al 8087 8Mhz Co-Processor tered 80287 880: Intel 80287 1080u

All Chies are Couranteed for Life

AC97 /

AC97

2548 Dynamic Ram Chips 1288 AT Mother Board Chips 8087 SMhz Co-Proce

MEMBERS PAY WHOLESALE AND GET 14-30 DAY

255 005

275 00

34 00

345.50

47.90

95.00 103.49 215.00

BUSINESS SOFTWARE NSA Parador 2.0 NFS fand SideKick (UnProtected)

fand Turbo Basic, Turbo C brough Software Time Line 20 and ForCommens-Single Author al Point Copy II PC peter Associates Supercalc TV or Super Project Plus Easy Accounting ise Direct Access

selies Energraphics 2.01 other Systems XTREE ak Software Sideways ward Presentation Graphics d Total Project Menager II de Observen

us Express, Metro en Managing Your Money Ver 30 Pre Wordstar Professional Release 4 Rim RBrue 5000

rollim R Bese Graphics et C Compile est Ability or InHouse Accountant gram Dollars and Sense w Forecase

nate Advantage II Muhemate Latest Version dust Clapper DBase III Compiler

Nonce (hipper 4.0 (New Version) ck Software VP Planner, VP Expert, VP Info d Mace Moor Uniters 40 re Publishing PFS First Choice re Publishing PFS Professional Write

es O&A Ver 20 Venaura Desiroo Publishing Vers 1 I

PC NETWORK-THE NATION'S LARGEST COMPUTER



well built and ha support be HE TAN H to make it a ve

tive alternative to hi

THE's bottom line? The PC+ is a highly compatible clos worthy of consideration...

PC WORLD

computer in our office, which has several name brands as

Computer Dealer



THE™PC ±

100% IBM Compatible 256K/w 360K Drive, Turbo Speed, AT Style Keyboard

Save on Famous Name Printers

PRINTERS toes MSP-15 160CPS 132COLFnc + Tree Promer 35 25CPS Described 15 EX 800 300 BOCPS 132COL For Ser EX 1000 300 60CPS 132COL Per Ser

FPSON FX-286E 132CPS/200CPS LQ \$420.00*

■ FX 86E 160 35CPS 10 Pa ■ FX 286E 200 40CPS NLO 1.0-800 180 60CFS 10 24 Pm Per Ser LN-800 180 30CPS 8.5 Per w Tru-

10 DAY HARDWARE RETURNS · CATALOG

(No Questions Asked, If You Don't Like It, Return It) (Thousands of Products Available)

PLUS 8% OR LESS SOFTWARE RENTALS

GAMES & EDUCATIONAL SOFTWARE

and Ancient Art of War At Sea The Past Shop

The Print Shop Library, Disk 1 or 2 naic Arts The Chessmaster 2000 raic Arts Sauflight, World Tour Golf

Graphics Scrapbook Chapter 1.2 or 3 Destroyer E Sub Battle Semulator

m Math Blaster or Word Attack Burenucracy, Hollywood Hyrox Hitchhilter's Guide, Ballyhoo, Fooblishy, or Trinity The Lurking Horsor or Stationfall

Zork Trilogy see F-15 Strike Engle. Silent Service or Solo Fight

oft Flight Simulator Vers 2 ape Balance of Power or Crossword Magic tape MasterType

On-Line Black Cauldro ra On-Line King's Quest III, Space Quest in & Schooler Typing Tutor III trum Bolobyin GATO aber Typing Made East

oard Certificate Maker, The Newsroom and Newsmann Pro gle Scenery Disks 1-7, Japan

M. Profes in This Advant Wholesale — Merethans Paylik — Over Wholesale Proves Plus Shipping Ad Proces Here A.P.: Cash Discount All arms Subject to Availables, — Proves Subject to Change Wilston & Risco

CHING D. P. LIMIN 1900 BY.T. - Moreover, consensus and processing of the Company amount of the CHING BROWN AND THE CHING AND THE CONTROL OF T

Mort Software Arestable for HEW ISM PA/2 Sentence, Call for Latest Printer & Annication PRODUCTS MAIL ORDER COMPANY...

Big Values on Computer Monitors

MONITORS 410 TTL 12" Amber, Green or leb Color 6005 13" RGB Hi Res Color 722 Enhanced EGA Montre th Color 725 13" Ultra Nr Res

M HX-12 Color RGB Morstor ne. HX-12E 10 Res RGB/EGA Monaco ne. Max-12E 12' Amber TTI. NV1311 13" Transvon RGB wrTV Tuner 12" Dual Frequency Amber Mont THE 12 Dail Frequency Green Monsor THE 12 RGB wrCable 12: Robanced Graphics

High Res RGR Monitor NEC Multisync Monitor

\$530.00*

Your #1 Source for Add In Boards VIDEO BOARDS

THE "Super EGA

\$145.00* 100% EGA/MDA/

LOW

CGA/HGC VLSI Technology 640x528 w/Multisync

des Color Card w/Prestet Port a InColor Card trees Outd EGA+ Short Size THE "Color Card 100% IBM Companie THE "N720 Mono Graphics wiTsralid Fort 7 Vega Delove

P NETWORK

MULTIFUNCTION CARDS Advantage for AT w/128K AST Sir Pair Plus w/64K Oedhaf Conquest w/0K, IS, IP, Clir Oedhaf Conquest w/0K, IS, IP, Clir Oedhaf Tiny Turbo 286 THE *Medit I/O I/O Plus Clone Ser-Pas Garne/Clock de 364 w/OK Ser/Far/Game ClivCei IB BAMCeré Lotat "/Intel "Speci w/OK

THE ™Best "AT" Clone in the Business NEW COMPACT SIZE THE" 286/12+ 512K Base System

6 or 12 Mhz Switchable with 101 Key "AT" Style Keybrd, Runs All Software Designed for the IBM" PC/AT led I Base System wil 2 Floppy Dave \$915.00"

30.00*

18.50

14 00*

64.50* 27.50

> The Best Buy in Modems 100% Hayes Compatible THE™1200 COMM EXTERNAL INTERNAL

> > ee Lightning-1 2400 Bood External Repes Smartmodern 2400 External Repes Smartmodern 12008 w Smartcom II Bayes Smartmodem 24008 Internal

\$109.00* \$88.00* (For the IBM * and clones MODEMS

IBM

del II Model I w-429/IB-6085 Deur \$1,395.00*

h Systems Come w/ Combination WD/TD Cont

IBM" PS/2 Model 30 **CALL FOR PRICES** IBM "AT BASE SYSTEM 256K/1 1.2MB Floppy Dr./Keyboard

\$2,204.00*

IBM "XT 286 System \$2,100.00" IBM "AT 339 30MB HD \$3,295.00"

\$315.00* THE™ 20MB THE Hard Disk Kit 42MB 1/2 Ht Hard Disk Kit \$449.00* Date JOHN Servery Box wires and Cont. \$1,850.00

PC Hoteroth . No 360K Playery Draw 10MB . Ph Hard Deer Re ork 2016 Capacity 1 At Hard Dec w/SLL Controller some 28MS Hard Drog Ar AT THAC I 2000 And On Proper for the IBM AT * 2000 HD 20000 Tape & U Combo No. * Sesser Mand Dark Cond

Migest Focket Modern THE "2400 Comm. Exernal 2400RPS THE "2400 Comm. Internal 2400RPS U.S. Robotics County 2400RPS Exern BOX OF 50

DS/DD

DISKETTES BOX OF 10

Box of 10 \$19.00* SONY 31/5" DS/HD Box of 10 for PS/2 49.00*

. All Hand Dreve dOMS for AT NEWSLETTERS • 24 HOUR BULLETIN BOARD • SOFTWARE RENTALS (Catalog Price Updates and Reviews) (10,000 Free Programs to Download) (Over 1,000 Titles in our Library)



YOUR PC WANTS YOU TO GIVE IT THE SAME ADVANTAGE YOU GIVE YOUR TAPE DECK AND VCR.

It's only fair. Not to mention logical. PC's want to perform as well as all your other sophisticated electronic equipment. If you're like millions of informed people throughout the world, you rely on the ultimate in audio and video recording performance. You rely on TDK.

Well, you should also rely on TDK when it comes to your computer. TDK's Floppy Disks provide the same consistently high performance. The same level of absolute quality. Which is understandable since all TDK products share an unparalleled level of technical superiority that spans over 50 years.

In fact, TDK is the world's largest manufacturer of magnetic media.

What's more, they're also a major producer of

electronic component parts, including the most sophisticated heads for disk drives. What a strategic advantage! With vital "inside" information like that, it's no wonder their disks provide error-free performance.

So, if you want to put a smile on your computer's face, choose from TDK's family of 5.25-inch standard, 5.25-inch High Density and 3.5-inch No-Risk* Disks. It's to you and your PC's advantage.



THE NO-RISK DISK



theastern Region: 516-625-0100; Southern Region: 404-948-1346; Midwestern Region: 312-676-5356; Western Region: 714-863-1844 e ree tox

USER-TO-USER



Create instant assembly language printer control files, protect your environment, avoid FORMAT disasters, and give your DOS commands multiple personalities.

PRINTER MASTER

we just bought a muckload of laser printers and had to create a whole new slate of COM files to Issue escape codes that would put them through their poets. In make creating custom primer control files casy, we whipped up two programs to do all the dirty work. The first, PRCODER BAT in Figure 1. does it from DOS. The second, PRCODER BAS in Figure 2, does

```
IT SAME ONE ONE PLANE
IT SAME ONE ONE PLANE
IT SAME ONE AND PLANE
IT SAME ONE ONE PLANE
IT SAME ONE ONE PLANE
IT SAME IT SAME ONE PLANE
IT SAME
IT SAM
```

Figure 1: PRCODER. BAT batch file to create PRCODE. COM programs that used escape codes a princer. The this is workly sourced to code as princer. The this is workly sourced to subdirectory or in a directory has your PATE boxes about, 17 his will create a file me PATE boxes about, 17 his will create a file me PACODE and other version to prevent never ones from writing over 11. To m ld. enter PACODE and the part of the send to your princer. To send 41110. 6119, and 41190. per PACODER 18–93

```
100 | Test | Tes
```

100 'PRODDER.BAS -- oreates printer control .COM flies
110 DIM IS(20):K=1:US=CHRS(50)+STRINGS(64,32)+STRINGS(64,20)
120 KSY 0; "LEXY 10; "DIEF FYSTE(Y)+WIDG(STRS(Y,2+(Y<0))
130 BAGS=",-)+=T-[]=;:C="CERS(54):KEY OFF:CLS
140 's=name the flie sus

Figure 2: PRCODER BAS program to create PRCODE.COM files that send escape codes to printers.

Learning Assembly Language is as Easy



The award winning TVC takes you inside the processor as it executes programs.

1.

An animated simulation of the PC's microprocessor.

The Visible Computer lets you see with your own eyes how assembly language works. You'll be using it as a debugging tool for years to come.

2.

A tutorial.

A lot of people think the 350 page manual is the best book on assembly language ever written.

3.

45 demonstration programs. Execute them with the simulator, from simple register loads to advanced programs that manipulate interrupts and perform file I/O. And what you'll learn applies to all 86 processors, including the 80186 and 80286.

\$79.95 Not copy protected. The Visith Computer for IBM PC/XT/XT and true compatibles. If your dealer does in have it, order directs Software Masters. 2714 Firefashber. Bryan, TX. 7790. (400) RC2-9690. Plemo mychole \$3.00 shipping. Bank carfo accepted.

Software Masters

■ USER-TO-USER

it from BASIC. To run PRCODER. BAT, you need to lave DEBUG.COM in your curren subdirectory or in a directory that your PATH knows abont. To run PRCODER. BAS yon obviously need to have BASICA COM hands.

PRCODER BAT reads parameters from the command line and inserts them in a DERUG script (to send the hex values &H1B, &H49, and &H03 you would type PRCODER 1B 49 3). You can enter several dozen codes on the same command line: the SHIFT cammand reads them in and substitutes them one by one for the %1 replaceable parameter in the ECHO MOV DL, %1 >> PR.SCR line. PRCODER .BAT then loops back and uses the IF %I(a = = (a GOTO FINISH test to see ifthere are are more command-line parameters to process. If it finds any, it concatenates them to the existing DEBUG script. If it doesn't find any, it immos to the :FIN-ISH label, adds the necessary DEBUG instructions to write the file, redirects the script into DEBUG by loading a secondary command processor (with COM-

PRCODER.BAT reads parameters from the command line and inserts them in a DEBUG script.

MAND |C DEBUG < PR.SCR) to creute the .COM file, and then erases the DE-BUG script.

If the user doesn't enter any parameters, PRCODE, BAIT primits instructions and then quits. DOS substitutes the cawal name of the baste file for the '80, on can renume PRCODER, BAT to whatever you want (with a BAT extension) the process will make each PRCODE. COM BE 284 bries long, the maximum length this process can hondle. Be some to renoureariting PRCODE. COM files before earling PRCODE. COM files before children deep with the process of the obliverated by the new.

While some users might argue that it really isn't necessary to rewrite the MOV AH,5 line each time, it's a good idea to do so since you can't always be sure the AX register will remain intact after an INT 21. Note alsa that some bingey versions of DOS have problems with an ECHO, statement, adding a period after ECHO simply seruk a carriage return in most versions. If you do stumble over this problem, substitute ECHO PC for ECHO, and ignore the error message DEBIG will give you.

PRESERVING THE ENVIRONMENT When I work on someone else's system, I often want to change the path or prompt

when I work on someone cise system, I often want to change the path or prompt temporarily. But I always want to leave things the way they were originally when I finish. The easy way to do this is to issue the command

SET > RESET.BAT

before I make any changes. This puts all the environment settings into a RESET .BAT batch file. When I'm done, I just type RESET and DOS puts things back the way they were.

COMSPEC and other environment variables require SET COMSPEC=xxxx phrasings, so RESET.BAT will produce a brief flurry of harmless enror messages as it executes. On the rare occasions when you do need to change these, you can always customize RESET.BAT with your word processor.

Richard Anderson

Oakland, California

In DOS 3.3 this can also reset the AP-PEND string, if one was placed into the environment with an APPEND 1E command. Around aur affices we're always working on other systems and changing the PATH and PROMPT. This technique is a real timesaver.

FORMAT PROTECTION

There's a simple and effective way to stop nasty or inexperienced users from wiping out a hard disk using the FORMAT command. Just rename an internal DOS command to FORMAT. and then rename FORMAT.COM itself. After this change, typing FORMAT C: will just produce an "Invalid number of parameters" message.

COMMAND.COM won't let you run a program with the same name as the name of an internal command like TYPE, RE-

MMEDIA

I	IBM
>	T 256K 1 Dr
>	T 640K 1 Dr/20M8
A	VT 339 1.2/30M8
F	S/2 Low Prices
D	Aono/Color Monitor

COMPAG

\$4450

\$1769

\$3,395 CALL

CALL

80/512K 1.2 Dr \$1595 90/1M8 3G + EGA \$4005 120/1M8 3G + 20M8 \$2205 140/1M8 3G + 40M8 \$2795 170/1M8 3G + 70M8 ...\$3195 Postscript Loser \$3395 NEC

ACER (Multitech) NEW 1100 386/16 MH/40M8 \$3505 900 286/640K/10 MH/30M8 \$2095 700 640K/8 MH/20M8...\$1250 700 640K 2 Dr + Monitor...\$1050

1800-0 286 8 MH 512K 1800-A 286 10 MH 512K....\$1095 1800-8 286 10 MH/D woit...\$1395 Excel Stream INT/EX... \$789/\$849 Edge/EGA 132 Col + Mono \$219/\$195 Modern 1200/2400 + Softwore \$99/\$199

EVEREX

Port II Model IV \$3400 DP286 256K/12 MH ... \$2395 DP286 1 Dr/40M8 . . \$3,405 DP386 40M8/16 MH \$4995 DP386 70M8/16MH \$5245 DP386 130M8/16 MH \$6295 PORT III/20M8 \$4400 PORT III/40M8 \$4900 Floppy Drives Graphics

Multispeed 640K . \$1495 Multisync Manitor \$549 G8-1 EGA Auto Switch . . . \$333 P6/CP6 216CPS/80 . \$461/\$559 P7/CP7 216CPS/132...\$657/\$730 P5XL/P9XL \$1029/\$1229 ***SPECIAL*** MicroPro Eosy + . VP Plonner + Sidekick 900 Plotters

7440A

7475A

590

\$89

\$195 Printers

\$289 OKIDATA

\$221 182/192 + /193 +

\$165

\$239

\$500

Draft Pro

292E/93E . \$599(\$699

TOSHIBA

351 II/351 C1

PANASONIC

T1100 + 2 Dr 640K \$1595 T3100 1 Dr 640K 10 M8....\$2900 5 1/4" Externol Dr \$399 3 1/2" Internal Dr.......\$129 Modem 12008 Lop Top....\$329 360K/1.2 Floppy \$99/\$129 Multifunction Scanners

TOSHIBA

Turbo System 4 Dr 25AK 8 MH \$480 Turbo System w/Monitor....\$667 Turbo System w/Color Monitor ...\$847 Turbo System w/20M8 . . . \$895 OUR Turbos have a 30-day guarantee.

FUJITSU, 360K TEAC, 360K/12 \$99/\$129

CLONE Hard Drives MONO + P/Port COLOR + Port FGA + Port SEAGAIE 20M8 ST225 Kit 0340 PARADISE Auta EGA 480 Auta EGA 350 Basic EGA ... Basic color/mono .\$103 MINISCRIRE QUADRAM

ATI

EGA Wonder

20M8 3425 5330 Pra Sync . wWD Cont VIDEO 7 40M8 3650 0.000 VEGA Delume wWD Cont 20M8 8425 3 5" Kit \$359 3/3MR 8438 3 5 TRLL \$389 Monitors 60M8 6053 5 5"... 72M8 6085 5.5"... \$599

CTX COLOR CDC MICRO DISPLAY 70M8 28 MIS \$995 Genius 402 Tape Backups ALLOY 20/25M8 YT or AT \$350 ADMAS INT/EX . SONY Multiscan 1302

Controller Cord \$149

\$450 Lasers \$269 HEWLETT PACKARD \$1295 Senes II witness & Cohie PRINCETON LM 300 \$1325 SAMSUNG Mono/Color PANASONIC . \$1549 EGA . \$79/\$269/\$399 OKIDATA

HEWLETT PACKARD AST Six Pack + \$159 Premium Pak 256K \$4895 \$100 Rampage PC 256K \$257 Rampage AT 512K

Advantage Prem \$445 Rampage EGA \$745 AWESOME I/O, Increase disk capacity 50% OK/512K \$425/\$595 **EVEREX**

Maxi Magic 2M8 .\$129 I/O. P/S \$69 Chips

256K 150/120 \$30/\$35 Input Devices 64K 150 Nano ... \$15 386/256K Ram NEC V20V30 . \$20/25 ogic Mouse 8us . . \$85 Microsoft Bus/Ser 8087-3/80287-6 \$119/\$219 8087-2/80287-8 Mouse System Bus. .\$179/\$295

Software Aldus Page Maker \$489 Brookland Bridge..\$109 LS-300 w/OCR Software Computer Assoc. CALL Corefast DOS backup \$90 HP SCAN JET \$1295 Crosslolk XVI \$109 \$300 dBase ti Plus Dac Easy Acc

\$45 Dow Janes, Market Analyzer 4 IBM Displaywrite 3/4 \$340 Intus 4.2.3 Freelance Plus . \$389 Mos Mace Utilities Microsoft Windows \$63 Open Systems Acc CALL \$40

PFS First Choice. Print Shap \$39 Ribase 5000/V \$439 \$138 Symphony 1.2 3455 WordPertect 4.2 3240 Minutitor Prof

Magic Mirror

Norton Littles

ierican

1-800-654-5365 In CA Cell (714) 754-1154 17151 Newhope, #104, Fountain Valley, CA Open SAT, 9am to 20

\$1599

\$249/\$399/\$400

\$952/\$1076

121 C witnestey 55.10

10801/10911.\$169(\$185



PRINCETON

Modems

1200/2400 \$99/\$199

\$109/\$179

\$115/3699

\$109/5219

US ROBOTICS

1200/2400 INT

1200/9600 EXT

MIGENT POCKET

EVEREX

on all products, expect for stress will warranty is 90 fles Returne

CMS Drive Plus 21

Performance Reliebility

Value



Drive Plus 21

Unbeatable low price for a hard disk card.

GEM™ Desktop Software included. 30 & 40 MB models also available.

Call today for the name and number of your nearest CMS dealer.

CMS Enhancements, Inc. 1372 Valencia Avenue, Tustin, CA 92680 (714) 259-9555 Telex (823) 371-8711 FAX (714) 549-4004

GEM is a trademark of Digital Research

CIRCLE 151 ON READER SERVICE CARD

■ USER-TO-USER

NAME, or VER. It keeps these internal commands in a built-in table, and this technique simply replaces the six-letter RE-NAME table entry with FORMAT. If you

 There's a simple and effective way to stop inexperienced users from wiping out a hard disk using FORMAT.

replace RENAME with FORMAT, you'll still be able to use REN to rename your files, but COMMAND.COM won't recognize the longer (and former) RENAME command. And it won't let you run your and hit the Enter key.

external FORMAT.COM program.

If you type in FORMAT or FORMAT C: at the command line, COMMAND .COM will think you typed in RENAME or RENAME C: and will simply print out an error message.

You could use either The Norton Utilities or DEBUG to change RENAME to FORMAT. Once you've patched COM-MAND.COM, use REN to rename FOR-MAT.COM to FORMATU.COM (where □ stands for an ALT+255 null). To do this, type

REN FORMAT.COM FORMAT

but don't hit the Enter key yet-hold down the Alt key and type 255 on the numeric keypad, then release the Alt key. The cursor will move over one space. Then type

COM

Finally, create a batch file called F.BAT:

echo off

echo. scho Insert disk in drive A: and format a: /v /s

Remember to type in format (where \square represents Alt+255) when creating your batch file, or this won't work.

One word of warning: don't keep different versions of COMMAND.COM on the same system or DOS will become confused. It's a waste of space. And that's what SET COMSPEC is for.

It's true that a power user could bypass this by booting off a disk in drive A:, but, for that matter, that someone could just pour coffee on or set fire to a hard drive to kill it. But my feeling, based on extensive experience with users at all levels, is that probably the most dangerous crowd, in

BLANKITY BLANK eliminates repetitive data entry for anyone using a word processor to prepare forms and documents.

Think of the size of this market!

Document production is the Heart and Soul of office automation in the gigantic legal, medical, financial and insurance industries.

■ BLANKITY BLANK software works automatically and directly with the user's word processing program to eliminate repetitive typing.

■ ■ BLANKITY BLANK even does 4-function math and columns, and will produce math answers in numbers or words ("99" or "ninety-nine").

■ ■ BLANKITY BLANK can provide

automated word processing for less than \$100.00 retail!

Don't miss this opportunity to cash in on the software utility word processing users have been begging for since computers began preparing forms and documents! Call for more information on BLANKITY BLANK today!



■ USER-TO-USER

terms of wiping out disks just for the hell of it, are users who do not have that much experience with PCs.

Jack P. Sperling New York, New York

To patch COMMAND.COM with DE-BUG, first make a backup copy of COM-MAND.COM called COMMAND.BAK so that if you make a mistake you can start over. Then type

DEBUG COMMAND, COM

Find out how long your version of COM-MAND.COM is by typing

and hitting the Enter key twice. You'll see

something like CX 62DB

Next, take the four-digit hex number after

the CX and type the following:

S 100 LAZDR "RENAME"

(substituting the four-digit hex number if yours is different from 62DB). Then hit the Enter key and next you should see something like

61B2:547B

Ignore the first four digits (the ones preceding the colon). Take the rightmost four digits and type

E S478 "FORMAT"

(substituting the four-digit hex number if yours is different from 547B). Hit the Enter key. Then hit W (and Enter) to write the new version back to disk, and O (and the Enter key) to quit DEBUG. Once you've patched COMMAND.COM, reboot your computer.

Another simple way to prevent unwanted formatting is to rename FORMAT .COM to something innocuous like DATA .COM and then insert a simple reboot routine at the beginning of your old FOR-MAT.COM file. Type in FORMAT and the system will reboot. Type in DATA and you can format disks. The following DEBUG will create both files. Create it with a pure-ASCII word processor, or use the DOS COPY CON command. Name the file FORMAT.SCR

- N FORMAT.COM N DATA COM
- N FORMAT.COM
- E100 B8 40 00 8E D8 B8 34 12 E108 A3 72 00 EA 00 00 FF FF

Be sure to hit the Enter key at the end of each line, especially the last one (with the O). Then type

ND/N/-10/0/5

PC to MINI to MAINFRAME CONNECTIVITY SOFTWARE worful Atynchronous Communications Software

· Low Cost-No Hardware Required · 100% Error-Free Data Transfer · Automated Dialing, Scripts, etc.

· Sends Binary Data Text, or Commands · Fast, Accurate, Reliable-Ideal

for Financial, Accounting, Scientific Use

NOW AVAILABLE THROUGH LEADING DEALERS · \$250/Micros • \$495-895/Minia \$2995 up/Mainframes COMMUNICATIONS RESEARCH GROUP (800)-24-BLAST

15 Corporate Blvd. Birton Rouge, LA 70001 (504) 923-0888 LEX 750015 FAX 106-2105

WENDIN-DOS' WENDIN INC 8 P.O. Box 3888 Spokane, WA 99220

(509) 624-8088 List Price: \$99 In Short: A multiuser, multitasking MS-DOS replacement operating system that features file locking and file permissions and allows the user to address extended

WENDIN-DOS is a quantum leap ahead in operating system technology for desktop computers. It supports PC-DOS builtin commands and then adds new tasking, file protection, and com-

port features like multi-

ones to sun

mand language extensions WENDIN-DOS ean be booted from a floppy disk or a hard disk, and is configured with the CON-FIG.SYS file, just like PC-DOS. Features like swapping, user validation with passwords, and extra terminals can be enabled with

commands in the configuration WENDIN-DOS allows several people to use a computer at the same time. Unlike all other multi-

user operating systems, for personal computers, you don't have to pay more money to add more users. Just connect terminals to your computer with serial cables to your RS-232 communications

boards (even multiport boards are supported). Wendin's powerful operating system kernel ean also perform parallel computing tasks for each user. For example, payroll, engineering modeling, mailing lists printing, and database reorganization can all be run in the background while you work in the foreground. As such, WENDIN-DOS provides true con-

current multitasking and task switching. To order call (509) 624-8088

Or simply send a brief, written request for information about any Wendin product to Wendin, Inc., P.O. Box 3888, Spokane, WA 99220-3888. We will send you an exciting full color catalog and free product line demo diskette, while supplies last, compliments of Syncom Technologies, Inc. and Wendin,

Wendin is a registered trademark of Wendin, Inc. WENDIN-DOS is a trademark dis, Inc. MS is a tra

THE DOS OF THE FUTURE IS HERE

CIRCLE 741 ON READER SERVICE CARD

Links Different Operating Systems

· Easy to Use for Everyone

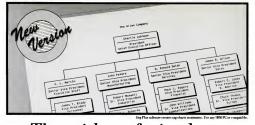
or Xmodem

· More Powerful Than Kermit

· Uses Any Modem, Any Speed.

X.25/ISO/SNA Compatible

IBM, DEC, HP, DG, WANG, PRIME, etc.



The quick, professional way to show who's boss

Your organization chart communicates structure that is difficult to describe in words. Why is Org Plus™ such an outstanding way to create these charts?

"Nothing else {works} as quickly or neatly as Org Plus... a handy accessory and worth every penny of its reasonable price."—Bill Howard, PC Magazine January 13, 1987

Just enter names

Simply type names, titles and comments. Then let Org Plus do the hard work. Org Plus automatically draws and spaces the boxes, centers the text, and precisely laps out the connecting lines. The chart is so exact you can use it in any situation, no matter how formal. Yet with a typical printer you have your chart in only 3 minutes.

Flexibility and power

Choose from 7 chart styles and 8 box asyles—even mix different styles in a single chart. Boxes can have 8 fields of text, plenty of room to include title, department, phone number, and more. Add asxiliary lines to describe dual reporting relationships and matrix organizations.

For large charts, you can use timesaving copy features to create your chart. Just type in a title once and copy it to appropriate positions in the chart.

Manages numbers too

Keep track of numerical information such as salaries, commissions, budgets, office space, and project hours with a mini-spreadsheet for each employee. Org Plus does the arithmetic so it is easy to compare results by individual, deparment, or level. Even perform "what if" analysis on your crannization.

And Org Plus provides efficient ways to use the information in your chart. You can generate reports, such as a company telephone book, and sort it by last name or department.

Even small organizations find an organization chart helpful

for communicating and planning. As you grow, charts can grow with you to handle hundreds of employees.

Rave reviews "[Org Plus] is an outstanding timesaver and delivers what it promises: neat,

ing timesaver and delivers what it promises: neat, professional-looking charts delivered with a minimum of fuss."—Howard Millman Facilities Manager, 1986 "Thanks to Org... it's simple to redo org charts and only takes minutes." —Jacqueline Murzycki, Lotus Magazine May 1987. Reader Beviews

Order today risk free

30 day money back guarantee if you are not satisfied for any reason. To order, call 415-794-6850

Org Plus for quick and easy organization charts

\$79.95 plus \$3.00 shipping, \$82.95 total CA residents add \$5.60 sales tax.

Baner Blue	P.O. Box 7865 Fremont, CA 94537	415-794-685
Send Org Plus for my & primer or HP plot	tBM PC or compatible. I ser. Media for the new PSG	Requires 320Kb RAN Envailable on reques
	hipping, \$82.95 total. In l	
_ Visa _ MC _	Amer Ex Check (US C	only) PO (US Only
Card No.	Phone	

Reviewers' comments are based on versions 1A and 2 of the program. On Plans works on an IBM FCXTME, the PN2 Family or 100% compatible compares with a naturation of 200K in BAM.
DOS version 2.0 or higher and a primare of IBP plates are required. Compatible with Nelsonys - 100g Plan is not exp. postered. A 120 page liver's Coule and telephone support are included.
Bills in a registered partnershould felloward and Bounest Nelson's Corp. Schways in a tolerant of Your Nelsons ONET Susses (Back Schward) (Fig. 200K). All offices are forestoned by

Attention all FX80, FX100, IX, RX, & MX owners:

You already own half of a great printer



Now for \$79.95 you can own the rest. You see, today's new dot matrix printers offer a lot more. Like an NLQ mode that makes their letters print almost as sharp as

work like the new models in minutes- at a fraction of their cost. And FX, IX and MX models will print the IBM character set, too.

a daisy wheel. And mode switch-So, call now and use your Visa, ing at the touch of a button in over MasterCard, or AmerEx, Don't 160 styles. But now, a Dots-Perfect replace your printer, upgrade it!

1-800-368-773 (Anywhere in the United States or Canada)







Dresselhau 8560 Vineyard Ave., Ste. 405, Rancho Cucamongo, CA 91730 CIRCLE 295 ON READER SERVICE CARD

(714) 945-5600

An upgrade kit for EPSON FX, JX, RX, & MX printers

COPY II PC OPTION BOARD

AN ALMOST FOOLPROOF WAY TO MAKE ARCHIVAL BACKUPS OF

PROTECTED SOFTWARE! The Copy if PC Option Board is an easyto-use add-in board that will give your PC the same disk duplication technology used by most disk duplication firms (who put the copy protection on software in

DUPLICATES NEARLY ALL PROTECTED DISKETTES.

the first place)

The Option Board can easily backup almost all protected diskettes for the IBM PC, including ones software-only backup programs can't touch. It even includes a track editor that will allow the more technically inclined to look at protection schemes and edit any data on The Option Board uses a half-size slot in a IBM PC, XT or AT, Heath/Zenith 150, 151, 158, Compaq Deskpro. Requires: 1 360KB drive, 256K memory. Extra \$15 cable

required for Compaq Portable, HP Vectra Call 503/244-5782, M.-F. 8-5 (West Coast time) with your DEC. in hand. Or send a check for \$95.00 U.S. plus \$3 s/h, \$15 oversee ease specify your computer brand on ordering so we can send you the

correct cable \$95.00

Central Point Software, Inc. 9700 S.W. Capitol Hwy., #100 Portland, OR 97219



Backup utilities also available for the Macintosh, Apple II, Commodore 64/128 and Ateri ST,

PRODUCTIVITY

USER-TO-USER

DEBUG & FORMAT.SCR

You could, of course, create a tiny 16byte reboot file called FORMAT.COM. but the short length would be a tipoff to an unauthorized user that something was amiss.

MILITPLE CHOICES

Commands like COPY and DIR don't take multiple arguments. A way around this is to have DOS do the command multiple times, each with a different argument. For example, to copy all .COM and .EXE files to a floppy disk, you could type

FOR MF IN (*.COM *.EXE) DO COPY MF AL

While this works, DOS will grind through the process one file at a time rather than ganging things up as it does with wild-

Using a FOR loop on the command line isn't limited to just filenames. DOS commands can also be used as FOR loop variables as in

FOR MC IN (COFY ERASE) DO MC A: * . EXE

to copy .EXE files from a floppy disk, then erase them from the disk. Geoff Walsh

Beverly Hills, California

Another way to do multiple copies on the same command line is to use piping. The following command will copy all your

.COM and .EXE files to drive A: COPY *.COM A: : COPY *.EXE A:

Also, if you try the above FOR . . IN . . . DO technique, remember to use single % signs only in direct mode (at the DOS prompt); in batch files you have to use double %% signs.

SHARE YOUR DISCOVERIES

Tell fellow users about your latest discovery through User-to-User, and we'll pay you between \$50 and \$300, plus an extra \$25 if you submit it on a disk. If you send a disk, please include a printout to ensure against damage. Mail your contributions to User-to-User, PC Magazine, One Park Avenue, New York, NY 10016.

LASER PERFECT VISION.

imagine your PC being able to see photos, graphics, illustrations and precisely position them on your reports and proposals before they appear in print on your laser printer. Preview the graphic impact of charts and tables, modifying at will, before pressing the print button.

The Princeton LS-300 Scanner affords you the gift of foresight. It can scan a full page of text and images into your IBM PC/XT/AT or compatible at a laser-perfect 300 dots per inch.

The compact design of the LS-300 is ideal for desktop publishing applications, especially news-letters, reports, and proposals. Hardware dithering produces 32 levels of gray to make photos and illustrations pop off the page.

The LS-300 can be used with your PC system with CGA, EGA or monochrome displays, or teamed with the new Princeton LM-300 or LL-state or the property of the pr

Free PC Paintbrush Plus!

A \$149 retail value, the amazing PC Paintbrush Plus is yours free with the purchase of the L\$-300 Scanner. PC Paintbrush Plus letsyou create image files which can be used with Ventura Publisher, PageMaker, etc. for professional quality drawing, diagrams, charts, graphs and quality drawing, diagrams, charts, graphs and the professional profes

Cost Effective.

Put a spark into the methodical task of scanning with the quick, creative and productive LS-300. It's available with adapter board, PC Paintbrush Plus software, and all cables at a suggested retail price under \$1,200. For an eye-opening demonstration — and an example of Princeton quality and reliability — visit or contact your Princeton dealer today.

CIRCLE 209 ON READER SERVICE CARD



Viso evaliable is an SCST interface Asia Scan's for the topic Macintosh for ucan scan, edit and store a variety of Mac desktop sublishing applications — MacPaint, AccWrite, Pagenesky Read/Selfol, logitime and Just lead — and north on

*New image Technology, Inc.
10309 Greenbett Road Seabrook, Maryland 20706

GOI, Marrhatten Gra



"We've Learned Something—Our Sales Dropped Like You Can't Imagine When We Missed Just One Issue Of PC Magazine!"

Iack Leach

Polaris Software

After finding that PC Magazine pulls five to one over other books, Polaris Software is dropping the seven others they tried so they can "concentrate on a stronger presence in PC Magazine. The others don't give us that much additional business."

Polaris Software has not only proven that PC Magazine works best, "we've learned something—our sales dropped like you can't imagine when we missed just one issue of PC Magazine!"

As a direct sales organization, Polaris Software is guided by a basic business philosophy: "It's not enough to have a good product. You also need the right whicle to communicate that you have a good product. PC Magazine does that every time. So I wasn't upset about the new rate increase at PC Magazine. After all, my business has tripled in just two years, and I know I'm reaching

more and more

buvers all

the time"

PC Magazine is the preeminent PC/MS-DOS publication. Not only because it offers marketers the fastest growth and largest circulation in the field, but it is also the one publication brand specifiers read most and trust most. It's here that you can find your best sales. Not convinced? Then there's only one thing for you to do: accept our challenge. We say that PC Magazine does the best job for you, and we challenge you to ask the people who keep you in busi-

Remember, PC Magazine

delivers 425,000 brand speci-

fiers who consider PC Maga-

zine an indispensable part of

their brand selection. Polaris

Without question,

Software couldn't agree more.

people who keep you in business what they rely on for the information they need to buy products. PC Magazine will be at the top of their list! It belongs at the top of your list, too.

MAGAZINE

HE BIG BOOK

MEASURE

One Park Avenue New York, NY 10016 (212) 503-5100

"I Subscribe to Ten Computer Publications... I Use PC Magazine When I'm Choosing Which PC Products to Buy."

Leslie Highleyman knows exactly how crucial it is to keep current on PC technology. And when it comes to sorting through hundreds of new PC products, she's got too much at stake to take chances or try to wing it. She needs to be confident about every purchase decision she makes. With PC Magazine behind her, it's no problem.

"I subscribe to ten computer publications... I use PC Magazine when I'm choosing which PC products to buy. It's the

most reliable source of information." With the high risks involved in the

purchase decisions she has to make, Leslie Highleyman can't afford to miss a thing. So she counts on PC Magazine to help her make the correct choices.

"Even the ads in PC Magazine keep me aware of new productsand in my position, that's critical"

Leslie believes in PC Magazine. "I refer to PC Magazine constantly. And I keep a library because our end users find it useful, too. They trust it so much, they don't bother to look elsewhere. We all really rely on what PC Magazine

Leslie sums it up: "PC Magazine has clout. I've even had vendors tell me to look up something in PC Magazine."

More brand specifiers like Leslie Highleyman believe in PC Magazine. For 375,000 of them, it's the Big Book. In fact, more buyers in any target market turn to PC Magazine for the product evaluations and enhanced productivity they need. Including the one out of three readers (115,000) like Leslie who are MIS/DP or other computer-titled professionals who read PC Magazine.

For PC marketers, PC Magazine is not only the largest and fastest growing MS-DOS book, it's unrivalled in influence. When one book has the clout to deliver all the buyers you seek, why

In addition to selecting PC products, Leslie Highleyman sets up end user policies and provides technical support and training for more than 100 end users at the Givaudan Corporation, an international manufacturer of flavors, fragrances and aromatic chemicals.

> Leslie Highleyman End User Computing Analyst MIS Department Givaudan Corporation Clifton, N.I.



120 MB AIN'T MUCH.

Not anymore, it ain't. After all, when

you're putting together PC-AT systems for today's advanced applications, even 120 MB of storage may

not be anywhere near enough.
So now you can get that much
storage and more. From our family of
SpeedStor* 70 MB to 320 MB hard
disk subsystems and 800 MB optical subsystems.

They're engineered for easy installation and full compatibility 800MB (PC-800) \$2995*

120 MB (AT 120)

\$1795*

\$2995* 160MB (AT160) \$1995* with DOS, Novell™ and Xenix™

> What's more, they're built around reliable, field-proven Maxtor drives and our own industry standard

SpeedStor integration software. And with these prices, you really can't afford to let low-capacity storage limit either your system or your application.

So don't build a system that ain't as much as it could be; call us today, 408/395-2688.

STORAGE DIMENSIONS

A Maxtor Company

Distributed by Anthern/Lionex Electronics, Future Electronics, Pioneex Standard Electronics, Quality Components and Stores Will pricing, corporate accounts weekernes, SpecaStor is a rathernate of Storage Dimensions. Other names indicated by TM are trademanes of their respective manufacturers. © 1987, Storage Dimensions. CIRCLE 450, ON BEADER SERVICE AND

PC TUTOR



Putting spreadsheet data into word processor files; checking the status of ANSI.SYS; understanding hidden and zero-byte files; using SWEEP to take a DIR of your whole disk.

INTEGRATING PROGRAMS

I use both a spreadsheet program and a word processing program and would like to create and print documents that would incorporate both. Can I do this directly, or

is there something I can buy that will allow me to merge the two? George Phillips Palm Beach, Florida

I assume you don't want to give up your existing word processing and spreadsheet software and use instead an integrated system, such as Framework, that would allow you to mix word processing text, spreadsheets, and even graphics in a single document. This is, of course, the primary advantage of integrated programs.

You can often get the same effect with separate programs. It's messy but it works.

You're probably interested mostly in using a piece of a spreadsheet in a word processing document, Most spreadsheet programs have the ability to print a range of the spreadsheet to a file rather than to the printer. The file is usually a simple AS-CII format with each row terminated by a carriage return and line feed.

Most word processors can read an AS-CII file into a document. Some word processing mail-merging logic can "include" an external file when printing, so it doesn't actually have to become part of the document.So, to incorporate some tables from the spreadsheet into the word processing document, go into the spreadsheet, print the tables you want to files, leave the spreadsheet, get into your word proces-

sor, and read in the files. The only real problem is that if you make any changes to the spreadsheet, you'll have to go through the process again and replace the tables you've already read in, Again, this is a problem you wouldn't have with an integrated program.

If you have a hard disk, 640K of memory, and a graphics board, don't overlook the possibility of using Microsoft Windows to make the job of integrating standalone programs a little easier. If both your word processor and spreadsheet write directly to the display (as almost all do), you can still have both programs loaded under Windows at the same time. (Unless, of course, one of them is a mammoth integrated program.) Having both programs loaded simultaneously lets you easily switch between them without exiting one and running the other

The Windows Clipboard is specifically designed for interchanging data between

 We will soon be seeing applications programs written for Windows that will make the integration

of separate programs

a lot easier.

applications. It works best for applications programmed for the Windows environment, but it also has some limited use for old DOS applications.

For an old application that carnot run in a window, you can capture the screen image (either text or CGA but not EGA graphics) by pressing Alt-PrtSc. This image is stored in the Windows Clipboard.

For old applications that can be run in a window on the screen (which requires that they not write directly to the display), you can select a portion of the text appearing in the window to copy to the Clipboard, and you can paste something from the Clipboard into another old application running in a window. The pasting is done by turning the text into keystrokes, each line terminated by a simulated Return. Both of these tasks are simple menu options.

I recommend Windows because I believe it is destined to become the standard operating environment for PCs. We will soon be seeing applications programs written for Windows that will take full advantage of the data interchange capabilities of the Clipboard and make the integration of separate programs a whole lot easier.

DETECTING ANSLSYS

A friend of mine has an accounting program that uses ANSI.SYS for display output. This is the only program I've seen that requires ANSI.SYS. On a couple of occassions the software has been run without the ANSI driver, and the program proceeds along merrily without even a warning and

PROTECT YOUR COPIES OF PC MAGAZINE

Make your callection of PC Magazine o handsame addition to your affice or hame-and protect and arganize your capies for easy reference!

PC Magazine Binders and Coses are made of durable, luxury-laok leatherette over quality binder baord. Custam designed for PC Magazine, every order receives FREE transfer fail to mark dates and volume numbers.

FOR FAST SERVICE CALL TOLL-FREE 1-800-972-5858

MAGAZINE BINDERS

Hold your snap-on rods, \$9.95





PC MAGAZINE 499 East Erie Avenue - Philodelphia, PA 19134

rase send Binders Cases Quantity. .* Add \$1 per c

Charge my:	□ MC	(Minimum order \$15.)
------------	------	-----------------------

Cord No	Exp. Date	-
Me/Mes/Ms.		
	Pinese Print Full Name	
Address	No FO Box Number Recog	_
City		_
State	Zio	
*PA residents add	i 6% sales tax.	_

PC TUTOR

displays a lot of extraneous garbage to the screen. The software still seems to work OK except that something happens which trashes some hard disk files.

Why is it trashing files if ANSI.SYS is not loaded? Shouldn't it be checking for ANSI before it starts running? Could I write a program to test for ANSI.SYS and put it in a batch file that would stop the accounting program from running unless ANSI.SYS was loaded?

Gregory P. Simkins Pittsburgh, Pennsylvania

The file-trashing sounds very odd to me. When ANSI.SYS is not loaded, DOS simply passes all the ANSI sequences to the display. (That's the "extraneous garbage" you see.) I can't conceive of any way this would affect the hard disk.

There are a couple of ways to check for the presence of ANSI.SYS within a program. The first is to write the ANSI Cursor Position sequence to the display. This sets the cursor to a particular row and column. Then you read the cursor from the PC's BIOS using interrupt 10h, function call 3. If they're not the same, ANSLSYS is not loaded. If they are the same, try it again for another row and column just to make sure. (Note that ANSI numbers rows and columns beginning at I and the BIOS numbers them beginning at 0.)

A second method is to write the ANSI Device Status Report sequence to the display. This causes ANSI to send the Cursor Position Report sequence to standard input. That is, when you read the keyboard, the characters you read will be the ANSI Cursor Position Report sequence. If you read the keyboard and there's nothing there, then ANSI is not loaded. This is the only method built into the MS-DOS ANSI implementation that lets you check for its presence, However, it's kind of tricky because you don't want to get stuck waiting for a keystroke to be entered if ANSI is not loaded

A third approach could be incorporated in a batch file that loads the program in question. You would begin the batch file with an ECHO command that displays a bunch of ANSI control sequences. You could then follow that with an ECHO command that says, "If you see a bunch of parbage characters on your screen, press

Ctrl-Break and reboot with ANSLSYS." Follow that with a PAUSE command.

Should the program you speak of be checking for the presence of ANSI itself? Well, yes and no. ANSI.SYS is a peculiar animal. Virtually all popular MS-DOS machines are IBM compatibles. Programs that need to do cursor positioning generally use the BIOS for that job. However, there are some MS-DOS machines around that do not duplicate the PC's BIOS. That's where ANSLSYS is valuable. Your accounting program will run on those machines also, while programs that use the PC's BIOS will not.

If the program checked for ANSI.SYS using my first method, then it would work only for IBM compatibles. The program could use the second method, but as I mentioned, the method is a little tricky and the ANSL-SYS documentation does not indicate its applicability for an ANSI.SYS check. Moreover, the program could be configurable for other terminal emulations (such as VT-100) that might not have a similar facility.

ZERO-BYTE FILES

mand

I have some questions about hidden files and zero-byte files. When I use the com-

FORMAT A: /V

and I later check the disk with CHKDSK. why does it show "0 bytes in 1 hidden file"? How do I delete that file? Not only can't I delete it, I can't find it using The Norton Utilities.

Also, why does the DOS command REM DIR>ABC

create a zero-byte file called ABC? (This one I can delete.)

Bill Richrath Elmhurst, Illinois

When you format a diskette with the /V switch, FORMAT adds a volume label (simply a name of 11 characters or less) to the diskette. DOS has to put this volume label somewhere on the diskette, so it creates a directory entry for it. It has zero bytes because it doesn't have any data associated with it. The volume label is a special directory entry that doesn't show up in normal file listings. (DIR. VOL. and CHKDSK

No Kidding!

Incredible Limited Offer

IBM PC-AT Compatible

10 MEGAHERTZ

EGA Color System

\$1295

PRICE INCLUDES:

• Enhanced graphics adapts
video card

 Samoung 640 x 350 EGA color monitor
 Intel 80286 running at 10MHz

8 expansion slots
 Phoenix or Award BIOS
 640K RAM up to IMB on

motherboard

• 360K floppy drive

• Dual floppy/hard disk controller

• KevTronecs 101 new enhanced

keyboard
 185-200 want power supply



Lowest Price Ever!

\$895

PRICE INCLUDES: • Intel 80286 running at 10MH:

8 expension slots
 Phoenix or Award BIOS
 640K RAM up to IMB on

 640K RAM up to IMB on motherboard
 360K floppy drive
 Dual floppy/hard disk control

 KeyTronics 101 new enhanced keyboard
 185-200 watt power supply

185-200 watt power supply
 SAME AS ABOVE WITH

\$1350

■ Seagate

43 Meg Hard Drive Samsung EGA Color System

\$1750



CLONE COMPONENT DISTRIBUTORS OF AMERICA 17610 Midway Road, Suite 134-342 Dallas, Texas 75252 For Order Information, Call Toll-Free

1.800.637.CCDA

Person Because of this extravedway offer, we accept only personal checks, cather's checks, money orders or wire numbers. C.O.D.'s and credit cards, call for informs hispoings Free shapment within the continental United States UFS, ground, Insurance or special shipping extra immediate shipment subject to availability. Memorater Chee or Internal neutrons, come and labor included, shapment or included for C.O.D. medium. Breadlands conducts have memorated to account of the conduction of the conduc

Traces for the four interest warmenty queries and decor inclusion, interpret mode included on CCLA products, orange-many products more manufacturer in prices adjust in charge valueur mode.

CIRCLE 337 ON READER SERVICE CARD IBM PC-AT is a miderack of IBM Corporati

■ PC TUTOR

can, of course, retrieve the volume label and display it.)

If you don't want the volume label on the diskette, don't format with the /V switch. If you want to remove a volume label from a diskette, you can use the LABEL command included with DOS 3.0 and above:

LABEL A:

When the LABEL command asks what the new volume label should be, press Enter. When it asks "Delete current volume label (Y/N)?" answer with a Y.

In your second example, when you enter the command

REM DIR>

the """ symbol is DOS's redirection symbol. This directs display output from a command into a file. So, when DOS executes this command, it first creates a file called ABC. Then it executes the REM DIR command. But REM doesn't display any

"With Watson, I can make 50 cold calls a day without picking up the phone."

Independent insurance as Businesses MA

While Paul Gilpin is out servicing clients, his watson is doing something every agent hates: making cold calls. Watson automatically dials prospects, delivers a high-quality, digitally recorded sales message, and records resoonses. And impressive sales results. A

multi-purpose voice processing option
for IBM PC, XT, AT, and compatibles,
Watson has a base price of \$498.
For an ear-opening demo on how
Watson can help you manage business communications better, dial



Watson

Natural MicroSystems Corporation

Notion is a trademark of Natural MicroSystems Corp. IBM PC, XT and AT are trademarks of international Business Machines Corp.

CIRCLE 730 ON READER SERVICE CARD

■ The recent DOS 3.3 lets you use inactive redirection symbols in commands by enclosing

the command line in

quotation marks.

output. When REM finishes up with whatit has to do (which is basically nothing). DOS closes the ARC filet. The file is empty. In DOS versions up through 3.2, there's no way around this. However, the recently introduced DOS 3.3 lets you use inactive redirection symbols in commands by enclosing the command line in quotation marks thus.

REM "DIR>ABC"

LISTING ALL FILES

can do it. Enter

Is there a way to display or print the contents of all files on the hard disk with just a simple command? I've been using a batch file that executes a DIR command with each of my subdirectory names, but I have to edit the batch file whenever I add a new directory to the hard disk.

Charles R. Pegler South Hauppauge, New York

If you need only the names of the files and subdirectories, the CHKDSK command

POWER VISION

The First Quality Standby Power System Made To Fit Everyone's Budget

Statistics prove that every week in every area of the country there are electrical power surges, spikes, brownouts and blackouts. Electrical power outages can destroy not only valuable data and processing time but can also cause irrevocable damage to your expensive computer hardware.

expensive computer nardware.

The PowerVision 300, designed for PCs, retails for a nominal \$539. Yet it matches SPS's costing twice as much feature for feature, making PowerVision the first truly affordable high quality sine wave SPS.

In addition to the PowerVision 300 watt system, 500 and 1000 watt units are available for larger computers. All three feature an immediate transfer. PowerVision provides

blackout, brownout and transient protection for your hardware and important data—ultimately saving you time and money. C-COR Electronics, maker of PowerVision, has extensive experience in power protection devices. Our PowerVision line is backed by a one year limited warranty.

PowerVision products are as close as your phone. Don't be left unprotected any

n't be left unprotected any longer.

at 1-800-445-9366. In California call 1-619-546-9399.



The Power Rehind The Best Minds

CIRCLE 279 ON READER SERVICE CARD C-COR ELECTRONICS, Inc. 6150 Lusk Blvd., Floor B-200, San Diego, CA 92121

26 Mailing List Managers Compared:



68 Point Comparison Chart

ProMark, the integrated Mailing List Manager and Desktop Marketing Software, is compared point-by-point with PC Magazine's top 25

KRIEGERDATA

International Corp

PLUS...

FREE

FRFF ProMark Demo Disk See for yourself why users rate ProMark #1

Call now! 1-800-663-4687

CIRCLE 490 ON READER SERVICE CARD

MANUFACTURERS TAKE NOTE!

When your product or company is covered by this magazine, you can order custom designed reprints* for use in promotional mailings, sales kits, press releases and pointof-purchase displays.

For more information on how you can take advantage of this wonderful promotional opportunity, call or write:

Jennifer Locke-Reprints Manager, Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016 212-503-5447.

*Minimum quantity-500 reprints

■ PC TUTOR

CHKDSK /V

The /V switch stands for "verbose." If you want to direct the output to the printer, simply type

CHKDSK /V >PRN

However, the CHKDSK command lists only the names of the files without the file sizes, times, and dates.

To execute a DIR command for all subdirectories on a hard disk, I often use a program called SWEEP (see "Cleaning Up with SWEEP," PC Magazine, Volume

 SWEEP repeatedly executes a command such as DIR in the current directory and all nested subdirectories of the

4 Number 23). This program repeatedly executes a command in the current directory and all nested subdirectories of the current directory.

Thus, to get a DIR listing of all your subdirectories, you enter

SWEEP DIR

current directory.

or, to print the output on the printer, SWEEP DIR >PRN

If you have a modem and communications software that can use the Xmodem protocol, you can download SWEEP COM from the PC Magazine Interactive Reader Service. Set your modem and communications software for 300 or 1200 bps, 8 bits, no parity, and I stop bit and have it call (212) 696-0360.

ASK THE TUTOR

The PC Tutor solves practical problems and explains points of general interest. To see your questions answered here, drop a line to PC Tutor, PC Magazine, One Park Avenue, New York, NY 10016.

PC Magazine's Direct Marketing Connection For PC Products and Services

For many of you, mail order is your primary means



*Starch Study July 1986

* SHARP FAX MACHINE *

Group III, axtremely Compact & light weight (11lbs), 8 levels of shading w/automatic contrast control, builtin 9600 Bd modem, manua/auto reception & transmission at 25 sec/page builtin Phone. Doubles as copar with many other batures as *Model FO-150 * Limited Time Offer

Other Fax Available . AT&T . CANON . TOSHIBA . . NEW SHARP UX-30 MEMO FAX

* LAP TOP COMPUTERS*

CP7 Color - Par PSXL Color - Par

Uni-Di Tractor for P2/P8

Br-Di Tractor for P2/P8

Bi-Di Tractor for P5

Uni-Di Tractor for P3/P7

Bi-Di Tractor for P3/P7 ...

Cut Sheet Feeder for P2/P6

Cut Sheet Feeder for P5 ... OKIDATA 192 PLUS 193 PLUS

ut Sheet Feeder for P3/P3

* SEAGATE HARD DRIVES* FOR PC/XT . HALF HEIGHT INTERNAL

Fully tested, w/controller, cables, manual & one year w 20 MB w/Seegele Controller 23 MB w/Adapte Controller Abova Drives With Western Digital controller

* FOR AT * WITH PARTITIONING SOFTWARE * SEIKOSHA SL-80AI PRINTER*

24 pin, 135/54 cps. Featuring Epson LO and IBM modes. Automatic paper loading and ajection system with 16k buffer. Narrow carriage, parallal interface.

PRINTERS	DRIVES	MONITORS	DISPLAY CARDS
ALPS PRINTERS ALO 200 Color, Narrow 16 pin, 200/100 cps 16 pin, 200/100 cps 16 pin, 200/100 cps 18 pin, 20	A SI Other Bibons As initiated a FULTISUTE ACT TO SEASON	HADRAYOT ELL ST. PROC CERT SAMBROOK 221 WAS ALVOID MARRING 252 WAS ALVOID M	ATT EOA Wonder WITM Mail Scan Medicin 20 GENOA Superior Medicin 21 GENOA Superior Medicin 22 GENOA Superior Medicin 23 GENOA Superior Medicin 24 GENOA Superior Medicin 26 GENOA Superior Medicin 27 GENOA Superior Medicin 27 GENOA Superior Medicin 27 GENOA Superior Medicin 27 ALAMAS SUPERIOR Superior Medicin 27 ALAMAS Superior Medicin 27 ALAMAS Superior Medicin 28 GENOA Superior Medicin 29 GENOA Superior Medicin 20 GENOA Superior Medic
Parallel w/3" custom cabla 325	For PC/XT, 1/2 Ht w/controller, cables.	With BOCA EQA 709	KEYBOARD/MOUSE
NEC P-9 Par 429 CP9 Color - Par 525 +P7 - Par 599 +	*20 Mb w/Saegata Con!289+ *30 Mb w/Adaptec Con!329+	With Genoa HiRes 919 With Paradise 480 849 + With Vega Caluss 849 + TAXAM 535/550 379/479	KEYTRONIC KB 5151 PC/XT . 159 KB 5151 for AT 179 New KB 101 for PC/XT/AT 109

	Abova Drives w/Wastern Digital controllar Add 10 For AT w/partitioning softwara+ 40 MB *> Ht 40 ms 469 80 MB 28 ms 679	TAXAN 635/650 379/479 With 557 Gold Card 599/699 +770 MoltiVision \$29+ With 550 Adv EGA Card 839 With ATI EGA Wonder 739 With BOCA EGA 659	I M S I Optimousa Ser w/Dr. Hallo II LOGITECH C7 Ser or Bus With PLUS softwara •With LogipainI
170	BACKUP	With Ganoa HiRes 869 With Paradisa 480 799	•With Logicadd •With Paint & Orew
26	ARCHIVE Specify XT or AT • 40 M8 Internal	With Vega Celusa 799 • TAXAN 840 16" 799 With Sigma 480 1099 New 860 EGA 18" CALL ZENITH Flat Screen CALL	MICROSOFT Mouse Sensi-Bus 119 MOUSE SYSTEMS PC Mouse • With Oesigner PopUp Me Sensi-Bus 99
60	• 40 MB External 499 •	MODEMS	POWER

Tractor 192 60	40 M8 External	MODEMS	POWER
PANASONIC 1080 i 165 1091 i 205 1092 i 345 1592 445 1595 475	20 MB Int Ext 579 689 60 MB Int Ext 799 889 60 MB Ext w/OIC Cont 999 Extra OIC Controllar 129 Bis kup Media CALL	EVEREX Hayes Competible • 1200 Bd int w/soltwarz . 95 • 2400 Bd int w/soltwarz . 185 • HAYES 12008 internal . 249 • 1200 Ed	REPLACEMENT POWER SUPPLIES With 4 pwr/drive connectors PC XT 150/AT 200 Watts . \$89/99 OATASHIELO 300 Watts Backup
SEIKOSHA	MATH/RAM CHIPS	For SmartCom Add	*350 Turbo Backup 499 * 500/800 Watts Backup 639/749
SL80 Par-Narrow, 24 pin w/tractor 135/54 cps	94K RAM Set of 9	PRACTICAL PERIPHERALS	*NEW Solid Stata 3" High UPS * SS 400/700 Watts UPS 699/699
341 SL CALL KENSINGTON Printer Stand 20 with Printer 15	8087-2 PC/XT 8 Mhz 149 80287-6 AT 6 Mhz 169 80297-8 AT 6 Mhz 259 80297-8 AT 6 Mhz 259	PROMETHEUS 1200 Ext 219 12006 wisoftwara 149 2400 G Ext 255 2400 Ext Expandable 319	KENSINGTON Masterpiece 95 Masterpiece Plus
LASER PRINTERS	90387-19 for 386 Machines 529	Expansion Modules	FAX/COPIERS
LASER CONNECTION Post Script PS Jet Printer 3699 PS Jet Post Script add-on 1999 New PS Jet + Call -	* FREE DELIVERY* Prepaid orders in Continental USA	*SUPER SPECIALS* *Limited Time Offer*	AT&T 3510 D \$1699 CANON FaxPhona 10 1599 CANNON P-25 Copier 849
			SHARP FO 2001299

*SHARP FO 200 *NEW SHARP FO 640 PANASONIC Laser Printer ... CALL Simply mail the check for the exact amount SEIKOSHA SL80 24 pin Printer 349 SEAGATE 40 Mb % Ht AT w/sw 449 ARCHIVE 40 Mb Int Backup ... 349 HAYES 12008 249 OUADLASER-LS1101 ICA add 6% as shown here with your order We will ship your order UPS Ground. **WESTERN EUROPE** FREE of any other charges it is that simple TREE of any other charges in Christonico

MAYES 10008
MICHEST Stronder in Normal a plantation security of the property or property of the pr 3 OAY AIR EXPRESS COD * American Express Get the latest products at the lowest prices, dailyared to your door step. Use your MC, VISA or AMEX.

Discover * MC * VISA

129+

110/100

12605 HOOVER STREET, GARDEN GROVE, CA 92641

PLEASE REFER TO AD # PC 799

California Digital 17700 Figueroa Street ● Carson, California 90248 PLOTTER 80 Character PRINTERS 20/20 Bernoulli Box \$1595 21 Megabyte Gold Card **DEC/TS03 Tape Drive** HARD DISK KIT U.S. Robotics 2400 Smarteam 2400

30MB HARD DRIVE

XTurbo System Including TTL Amber Monitor, Complete And Ready to Run





LOWEST PRICING EVER ... For a superb quality fully compatible XTurbo System. Not just an every-day ho-hum clone, but a true IBM workalike in a handsome AT Style Case with dazzling speed and every feature you want in an XTurbo Keyboard switchable 4.77 to 8 MHz, and wait 'til you feel the new Northgate "CLICK" keyboard with tactile feel, it's even better than the original IBM. AND...with your choice of 10, 20, 30MB hard drives, the Northgate XTurbo represents a truly exceptional value. It comes to you fully assembled, ready to use. More computing quality for the money than offered anywhere!

NOW...ALL BUYERS ARE COVERED BY OUR ONE-YEAR WARRANTY WITH OVERNITE PARTS REPLACEMENT AT OUR EXPENSE. Plus...the Northgate 30-day Compatability Warranty

assures your system works perfectly or return for a full refund. Compare quality, compare features, compare price, then PHONE NORTHGATE.

Look! You Get All These Features At Industry Low Prices:

- 1. Dual Speed-Keyboard Switchable 2. 640K Mbrd., 256K RAM Installed
- 3. 8087 Co-Processor Socket 4. Eight Expansion Slots
- 7. Can Boot-up in Turbo Mode
- 8. Unique, Heavy-Duty AT Style Case 9. Built-in Speaker
- 5. 150-Watt Power Supply 6. Front Panel Turbo/Power/HD Lights
- Runs all MS-DOS programs including 1-2-3, Flight Simulator, etc. and GW BASIC
- 11. Brand New (Not Rebuilt) Famous Brand Hard Drive and Controller Card
- 12. System Boots From Hard Drive 13, 360K Direct Drive (Not Belt Driven)
- Famous Brand Floppy Drive 14. Floppy Controller
- 15. AT-Style Keyboard, 84 Keys, LED Indicators and Large Return Key Monographics (Hercules Compatible) Card With Printer Port
 - 17. High Resolution TTL Amber Screen. 18. System Assembled and Diagnostic
 - Tested in our Labs. 19. One-Full-Year Limited Warranty
- 20. 30-Day Return For Refund Policy



Above System With 10 MB Hard Drive

COMPLETE

OPTIONAL Above System With 20 MB Hard Drive

COMPLETE

Use Our Toll Free Number









2905-Northwest Boulevard Suite 250 Plymouth, Minnesota 55441



10 MHz Ø WAIT STATE ATURBO SYSTEM

FULLY INTEGRATED AND COMPLETE! NO EXTRAS TO BUY. NO GIMMICKS OR HIDDEN COSTS. **1799**

INCL: 30MB WINCH., 2 Floppy Drives, New "CLICK" 101 Keyboard, I/O Card, Clock-Cal, MS-DOS 3.2 + Basic, HI-RES TTL Mon, Compl. Manual

AND...Northgate Guarantees: 1 FULL YEAR OVERNIGHT REPLACEMENT OF ANY FAILED PART—EXPRESSED TO YOU AT OUR EXPENSE!!!

A Lightning fast ATurbo System, ready to plug-in and run. Use Our Toll Free Number Unsurpassed quality in every component gives you true

power computing in a system experts agree cannot be matched for half-again our price! We even furnish MS-DOS 3.2 with GWBASIC at no extra cost! An \$85 to \$90 extra value!

And don't be concerned about reliability. Each Northgate ATurbo is precision-assembled and bench tested for a full

24-hours. AND... You Get A 30-Day Money-Back Compatibility

Guarantee...PLUS-A One-Year Parts And Labor Warranty Backed By A 17-Year-Old Corporation!

BEST OF ALL-Should Any Part Fail Within One Year. Northgate Will Ship You By Overnight Express, The Replacement Part And We Pay The Express Freight! ALSO AVAILABLE: HARD DRIVES TO 95MB, CGA, EGA, TAPE BACKUP

Because of uncertainties in internat are subject to change without notice

-548

Hours: 8:30-7 PM CDT • Sat. 9-2



NORTHGATE COMPUTER SYSTEMS

CONSUMER DIRECT COMPUTER MARKETING SPECIALISTS 2905-Northwest Boulevard, Suite 250







DISK DRIVE ON

EVERYTHING-IN-ONE CARD

\$119.95

QUALITY IBM COMPATIBLE MOTHERBOARDS

TURBO 4.77 / 8 MHz \$129.95 JDR PART & MCT-TURBO JOH PART & MCT-TUHBO
OR S MIN OPERATION WITH BOB
PTIONAL SORT-2 CO - PROCESSOR
METER OPERATION FOR MAXIMUM
OUGSPUT AND RELIABILITY
ONE OF MORMAL / TURBO MORE
DARD MOTHERBOARD
JOH PART & MCT-ATMB
JOH PART & MCT-ATMB



80286 8 / 8 MHZ **90 9982**

JOR PART # MCT-ATMB
I SLOT Q FIGHT BIT, S SIXTEEN SIT; AT
NOTHERBOARD
IARDWARE SELECTION OF S OR S MH.
WART STATE RESET SMITCH, FRONT PANEL LED INDICATOR AND KEYLOCK SUPPORTED SOCRETS FOR 1 ME OF RAM AND MOZZY ON ON BOARD BATTERY BACKED CLOCK OPERATES WITH PC.DOS OR MILOGE



IBM COMPATIBLE 31/2" FDD KIT BY TOSHIBA FLOPPY DISK DRIVE

100 0487 e 600-15 80

\$69.95 \$149.95

IBM XT STYLE COMPUTER CASE



T ON SIDE FOR PC/XT

\$34.95 AT STYLE SLIDE TYPE CASE \$30.00

360K DRIVE FOO CONTROLLER MONOGRAPHICS CARD DRTRON!CS MONITOR TOTAL: \$56615

BUILD YOUR OWN 256K

IBM COMPATIBLE KEYBOARDS



MCT-5339 \$89.95 LE LAYOUT

\$59.95 E 508 NT 08 AT

MCT-5150 \$59.95

MCT-5151 \$79.95

EASYDATA MODEMS

uchtone or pulse dialing, butt-in speaker, PC Telk III Com. Bell Systems 103 & 212A full or helf dunler

INTERNAL EASYDATA-12H

ATA-12B \$119.95 EASYDATA-12B EASYDATA-24B \$199.95 2400 BAUD FULL CA

EXTERNAL NO SOFTWARE INCLUDED EASYDATA-12D

EASYDATA-24D \$219.95

\$119.95



MCT DISPLAY CARDS

MCT-FGA \$179.95 COMPATIBLE (MASS COMPATIBLE) ASS COMPATIBLE WITH HIM EGG. COLON GRAPHICS AND MONOCHROMS ADAPTORS TIBELE SCANDAINO FROJENTORS OR GRASS ON SECRETARY ON EGG. STANDARD RGS OR NIGH RESOLUTION MONOCHROME MONITOR FULL 250K OF VIOLE DAM ALLOWS 640 + 250 PRIZEL IN N & OF SECOLONS

MCT-CG COMPATIBLE WITH IBM COLOR GRAPHICS STANDARD ORT SLOT CARD USES VLSI CHIPS TO

MCT-MGP

COMPATIBLE WITH IBM MONOCHROME AND HERCULES GR SHORT SLOT CARD USES VLSI CHIPS TO

\$59.95

\$49.95

31111111

MCT DEVELOPMENT TOOLS

ONE ARRAY LOGIC CHIP CAN REPLACE 4-5 1 ONE APRAY LOGIC CH PROGRAMS 20 & 24 PM PALE PRON TL NEC & MINE EAST TO USE MENU DRIVEN SOFTWARE ALLOWS PROGRAMMING VERIFICATION READING, MAP SULLING & BUTNING THE SECURITY FUSE READ AND SAVE BURN PROFILES IN JEDIC FORMAT ON YOUR DISK

\$269,95

CUPL STARTER KIT

MCT-PAL

MICROPROCESSOR PROGRAMMER PROGRAMS #741/2/R/9 PROCESSOR CHIPS

EPROM PROGRAMMERS

\$199.95

\$129.95

MCT-EPROM

PROGRAMS 27xx AND 27xxx SE

A SANS PRORESMMER \$1895 1D BANG PROGRAMMER 12991







Turbo-XT



1200 BAUD

DELUXE MODEM

. 640K of RAM

 150 Watt Power Supply Oeluxe Ker EGA PACKAGE

> Hi-res EGA Video Card... 748 Hi-res EGA Monitor... • Duel Mode Monitor • 640 x 350, 640 x 200 . FOA COA MOA A HOA

• Fast - 9 Inch Per Second · Accurate - .1 mm Step Size · Four Pan/Four Color Automatic Pen Capping Standard Parallel Interfecing Accepts Paper or Transpara . One Year Epson Warranty

4 Waterbese Pens 4 Oil Base Pens 100 Sheets Costed Papar 10 Sheets Overhead

Transparency Film Top Rated Business Graphics S Packaged for PC Perallal PC Cable HPGI Emiliator 21 MB CARD

HI-RES RGB MONITOR + 640 x 240 14" Non-plane Tube • 16 Color. 39 mm Oot Pitch

Manufactured

HARD DISK SALE

10 Megebyte 30 MB AT_1499

360K DISK DRIVE 1/2 Ht. Qume/Alps Built to IBM Speci



· Includes Free Ceble

LX-86, LX-800, FX-85e, FX-266e, LQ-800

20 MB ____1298 30 MB ____1346 40 MB AT _1599 Letter Quelity TANDON DAISYWHEEL 360K Disk Drivs PRINTER

LQ-1000, EX-800, EX-1000, LQ-2500, QQ-3500 Call For Our Best Price!

Ht Drect Owe \$79 Full Height \$98

\$149

\$199

\$179

\$249

\$299

∌LASER

NO-SLOT CLOCK • Uses No Slots • 20 Year Better Includes Softwere

e-in Clock Board for PC...4

8087-2 _ 8087-1 80287 _ 80287-8 80287-10 -

INTEL

Meth Co-Processor

31/2" DISK DRIVE 220K Disk Orive Fo Mass Storage or for Down Loading to you

Requires DOS 120

HEWLETT PACKARD ASERJET II

DE COMPUTER

PLACE ORDERS TOLL FREE! Continental U.S.A. (800)421-5500 inside California (800)262-1710

4901 W. Rosecrans Ave. Box 5046

Cs & Tx residents add sales tax Prices & availability subject to change without n We accept cash, checks, cradit cards or Shipping & handling charges via UPS Ground 50¢/lb UPS Air \$1.00/lb. Minimum purchase orders from qualitied firms and stitutions. Minimum prepaid order \$15.00. charge \$3.00

BIG SAVINGS ON HIGH-TECH COMPUTER ACCESSORIES

DOT-MATRIX PRINTER

was discontinued due to slight design changes.

 Bi-directional printing at 80 characters per second.
 96 character ASCII character set, 256 symbols and controls. Adapts to print IBM® character set and 8 foreign alphabets. • Full IBM® graphics. • 6" line langth. 80 characters per lins at 10 characters per inch. • 80 column built-in tractor feed and friction feed. Bottom, back, and front loading slots. Single sheet or continuous. • Parallel Centronics interface. • 1400 bytes buffer capacity. . 7.5K bytes per second data transfer rate. • 2,000,000 character black cartridge ribbon. • 120 volt AC Input power. • 110 watts max. power consumption. U.L. listed. 61/4"H x 161/4"W x 121/4"D. Wt.: 20.5 lbs. Operator's Manual and Service

One-Year Limited Mfr's. Warran

Guida Included

\$899.00 Item H-2203-7198-841 Ship, I







KYOCERA® MODEM

Extend the power of your personal computer with this advanced KM1200S Modern. A closeout means est savings and data as near as your phone. mple to set up and operate. FCC registered. Full or Half Duplex Modes. Variable Data Rate:
 110, 300 or 1200 Baud. Auto-Dial/Redial, Auto
 Answer, Auto Monitor. Ball 103, 212A Compatible.

Two-Year Limited Factory Warranty. Let... \$299.95

Item H-2203-7201-874 S/H: \$4.50 ea.

SURGE PROTECTOR Safeguard sensitive equipment and valuable data

from power surges and spikes! Guards Computer Hardware/Audio Systams from Voltage Fluctuations, e 2-Staga Protection (Diodes and MOVs), e Capable of Instant Response. • Up to 6000 Volts Protection. • 4 Outlets eset Switch, LED Indicator.

Two-Year Limited Factory Warr

\$119.95

Item H-2203-7121-734 S/H: \$4.00 ea TOLL EDGE, 1 000 220 0000

EXPANSION BOARD

Increase your computer's memoryl if you own a Xerox 6064 or other IBM® compatible, you can expand the memory to 640K. That's an additional 348K of RAM

Mfr. List \$249.00

SEND ME THE ITEMS	
Sales outside the 48 contiguous states are subject to special conditions. Please call or write to inquire.	Credit card oustomers can order by phone, 24 hours a day, 7 days a week.

Bern No.	Nam Description	Oty.	Price Es.	Tet. Price	S/H: Ea.	Total
H-2203-7190-641	Dot-Matrix Privier	\neg	\$349		\$12.00	
H-2203-7201-874	Kyocera Modern	\neg	\$79		\$4.60	
H-2203-7121-734	Surge Protector	\neg	\$39		\$4.00	
H-2203-7126-076	Expension Board		\$129		\$3.50	
	TOTA	L (Product	is plus ship,	handling)		

SEND TO: Direct Mark	eling Corp.	Nem H-2203
	Annespols, MN 55441-4494	
Send here indicated at left, My check or mone peid by check.)	(Minnesota residents add 6% sale y order is enclosed. (No del	stax. Sony, no C.O.D.) lays in processing orders
CHECK II	⊕ • • • • • • • • • • • • • • • • • •	
Acct. No.		Exp
Name		
Address		Apt #
	State	70
City		

★ THE ONE & ONLY STAR FOR MICROS ★

(312) 968-3323 outside Illinois call 1-800-MIC-STAR

Hi-Ras TTL Monitor

Mono-Graphics with PP

Microstar 386 1 Walt Stete 640K RAM

14.2 Mhz (18.7 Norton) 1.2 MB FLP 30 MB HD (Saagata) Enhanced Keyboard Monochroma Monitor Monochroma Grephics Ada Parallal Port/Clock-Calendal

Microstar-Super-XT 4.77 & 10 Mhz

ONLY. . .\$1099

20MB HD Phoenix BIOS 150 W. Power Supply 360K FD AT Styla Keyboard 640K RAM Hi-Res TTL Monitor Harc. Comp. Mono-Graphics card with PI

Microstar-Super-AT

6 & 12 Mhz I — O & 1 Walt State Phoenix Bros 220 W. Power Supply 1.2 MB or 360K FD AT Style Keyboerd 1MB RAM

Microstar-Portable " Green/Amber with Graph

ONLY. . .\$3799

Cepebility Compaq Styla Kayboard 3 Driva Slots 7 Expension Slots

20 MB HO 30 MB HD Phoenix Bos Phoenix Bios 1,2MB or 350K FO XT. \$1199 AT. \$2099

Microstar-XT Phoenix Bios 4.77/6 Mhz

20MB HD 360K FD 150 W Power Supply AT Style Keyboerd Hi-Res TTL-Monitor Herc. Comp. Mono-Graphics Card with PP

ONLY. . . \$999

ONLY...\$1999 eniv Rins

Microstar-AT R/10 Mhz 30MB HD (Saagate) 1.2 MB or 360K FD 220 W Powar Suppl AT Styla Kayboard 1 MB RAM Hi-Ras. TTL Monitor Harc. Comp. Mono-Graphics Cerd with PP Clock/Calandar

Ř

٧

ı

Ċ

WE WILL BEAT OR MATCH ANY ADVERTISED PRICE

\$249 \$345 \$599

\$79 \$199

NB24-15

NB-15

360K FD

640K RAM 1 MB RAM

PRINTERS EPSON LX-86 195 FX-88 FX-286E 465 445 645 LQ-1000 EX-800 385 EX-1000 515 LQ-2500 GQ-3500 STAR 1445 169 NP.10 209 NX-10 NX-15 319 ND-10 NR-15 319 419 NB24-10 429 629 849

469 669 1149 BROTHER 199 249 329 HR-10 M1100 141400 M1709

UPGRADES

SANYO COLOR UPGRADE SAMSUNG COLOR UPGRADE TATUNG COLOR UPGRADE EGA COLOR UPGRADE 30M8 HO UPGRADE 42MB HD UPGRADE

TOSHIBA P321SL 3-in-1./180x360 DPI 216/72 CPS 24 PIN

AXAN 720-396

CARD SHOPPE

CARD/MEMORY/I/O MGP Cerd \$79 Mono Color EGA Card \$79 Cerd \$79 VΩ \$79

Memory Card with 256K \$99 AST 6-PAK + 384K W/SW AST Rampage 2MB w/SIZK THESYS Fast Card III 2MB wick \$99

MONITORS SPECIALS

TAXAN 635 \$400 TAXAN 760 \$549 TAXAN 770 \$649 TATUNG 1322-Color/Mo Samsung TTL Hi-Res AmbenGreen Se Sony CLR, RGB, TV, VO IN \$499 Amdek TTL Hi-Res 310A \$149 Amdek TTL Hi-Res. 410 \$169 EC Multi Sync. (640°350) \$575

her HR-10 DSY WHL DS Back up + New Ver HI-FI I/O-25, 1P, C, G 1200B Modern Internal 2400B Modern Internal Sanyo Color Monitor

\$199 \$ 49 \$140 89 \$199 \$250 PC Mouse (Optical) \$ 95 SOFTWARE

ONLY. . . \$1899

OTUS 1-2-3 \$319 WORD PERFECT 4:1 \$199 dBASE III + \$399 Microsoft word \$279 Sidakick \$285 \$349

Multimete Advantage Paradox First Choica \$ 99 VP Planner \$ 69 PFS Profassiona \$129 Q & A \$239 \$ 89 Raflex \$429 Symphony

Microsoft windows \$ 79 Wordstar 2000+ \$399 Framework Direct Access \$69 \$69 The Newsroom PC Tools \$29 PES File \$99 PC Tools New Ver. \$29 Copy II PC Ver.4.0

DS Tutor DS Beckup + Word Parf. Lib. QUALITY IS OUR TRADEMARK

. Prices subject to chance without notice Typosiused products not matched Prices reflect cash discount
 School & corp & universities call for prices and term

(312) 968-3323 1-800-MIC-STAR 1303 Ogden Avenue Downars Grove, IL 80515 CIRCLE 200 ON READER SERVICE CARD

S \$29 RADEMARK \$49

ï

C

39

If you're looking for the best price on an IBM compatible PC,



Price includes monitors. drives, keyboard. - everything. Intel processor: Also Peripherals: Speed:

MS DOS and GW BASIC: \$75 Color 14" RGB monitor: \$320 Color-14" FGA monitor: \$399 360K drive with cables: \$89 1.2MB drive with cables: \$144 Epson LX 800 printer (80 column, 160 cps): \$238 Epson FX 286E printer (136 column, 240 cos); \$559 101 key keyboard \$74 RS-232 serial card \$36 Call for pricing on multi-function cards, expanded memory cards, modems, cables, etc.

PC-XT Compatible Turbo System 8088 8/10MH+ 256K 360K 150W PC-AT

RAM on motherboard Additional features:

Installed options: 640K RAM motherboard Hard disks with controller: 20MB (65MS) 30MB (65MS) 40MB (28MS)

Floppy drive: Power supply:

Monitor:

Printer port:

Keyboard style:

\$1,250 **|**\$1,450 PC AT PC AT Compatible Compatible Turbo System Super Turbo

80286 10/12MHz 8/10MHz 1024K 1.2MB 200W

200W AT Deluxe AT Deluxe 12" high-resolution monochrome with swivel base Parallel

Monochrome graphics card Full documentation; 10 Omni Disks preformatted for PC

\$70 \$379 \$379 \$379 \$424 \$424 \$619 \$424 \$619 \$619

80286

640K

1.2MB

PRISM	
I ICIOIVI	

Prism Technologies, Inc. 50 Howe Avenue, Millbury, MA 01527 (617) 865-0211 Fax: (617) 865-1853

Call toll-free (800) 648-7402 In Mass: (800) 562-9202

30-day	money-back	gu:	arante				
Get great	savings, free delive	rv. or	ar no-nisk	money-ba	ck guarante	e, and toll-free telephone supp	ort.
You must	be satisfied. Each	PC is	complete.	ready to	ise, and rus	is IBM compatible software.	

	 _		 Master Card Visa (Credit to qualified accounts)	Check
ı	 _		 Card /	Ехр
	 _	_	 Name	

Arlington Computer Products gives you the best prices on IBM PCs...

IBM XT CALL FOR CUSTOM CONFIGURATIONS

IBM AT 339 (8 MHZ)

1.2 Floppy, 512K, 30 MB Hard Disk w/Monochrome Monitor w/Color Monitor	\$3650 \$3850
---	------------------

IBM PERSONAL SYSTEM II

BRAND NEW AND IN STOCK - CALL NOW!

Model 30, 20 MB w/Monochrome Monitor .. \$1975 Model 50 w/Monochrome Monitor ... \$2975 Model 60. w/Color Monitor add \$250

COMPAQ 386

Model 70

Model 130

\$4695

\$5295

\$6375

and COMPAQ too!

COMPAQ PORTABLE

\$1595 2 Drives, 256K \$1950 1 Drive, 256K, 20 MB 1 Drive, 640K, 20 MB ... \$2025

COMPAQ DESK PRO

1 Drive, 640K, 20 MB Green or Amber Monitor

COMPAQ 286 DESKTOP - 1 Drive

640K, 30 MB, Monitor \$3075 PORTABLE II MODEL IV -\$2975 1 Drive 640K, 20 MB PORTABLE III -

\$3950 1 Drive 640K, 20 MB w/40 MR \$4495

\$249

DRIVES & TAPES 360K Floppy for PC..... \$99 360K Floppy for AT \$115

10 MR Tane Backup for XT

20 MB Tape Backup for XT \$459
20 MB Tape Backup for AT \$489
40 MB Tape Backup for AT
or Compaq 386
EVEREX
60 MB Internal Backup for AT \$719
60 MB External Backup for AT \$719
ou MB External backup for Al
SEAGATE HARD DISKS
20 MB Kit for XT (Model 225) \$319
30 MB Kit for XT (Model 238) \$349
30 MB for AT (Model 4038) \$519

40 MB for AT (Model 251) \$489 40 MB for AT (Model 4051) w/software.. \$659 80 MB for AT \$869 IOMEGA

10 + 10 Bernoulli w/Controller \$1489 20 + 20 Bernoulli w/Controller \$1950 PLUS hard card\$659

VIDEO BOARDS

Hercules Graphics Plus \$179
Hercules Color Card \$145
STB EGA Plus\$259
Paradise Autoswitch 480 \$339
Quadram Prosync \$349
Quad EGA \$309
NEC GB1 \$339
Vega Deluxe\$349
Everex EGA Autoswitch\$139
Everex Edge \$219
Hercules Compatible Graphics Card \$85
Herevies Composible Color Cord 600

MONITORS

AMDEK	PRINCETON
310A\$139	MAX12 \$159
410 \$159	HX12 \$415
600 \$349	HX12E \$499
722 \$459	
NEC Multisync	\$549
	\$319
SAMSUNG Color	\$279

FOR ORDERS & SYSTEMS QUOTES

0-548-5105

CUSTOMER SERVICE AND IN ILLINOIS 312-228-6333 SHIPPING 312-228-6333

TECHNICAL ASSISTANCE 312-228-1470

Products, inc. ARLINGTON HEIGHTS, IL 60005

Arlington

Computer

Prices and Availability Subject To Change Without Notice

Bringing you the best in IBM compatible peripherals since 1984.

OUR EPSON PRINTER PRICES ARE SO GOOD WE NEED TO SHOW THEM OFF!

LX 800 \$189	FX 286E \$419	LQ 1000 \$529	EX 800 \$365
FX 86E	LQ 800	LQ 2500	EX 1000
\$299	\$429	\$849	\$489

PRIN	TERS
EPS	ON
LX 800 \$189 FX 86F \$299	
FX 286E \$419	
	EX 1000 \$489
OKIE	DATA
192 Plus	\$349
193 Plus	
292 w/Module	\$549
293 w/Module	
Pacemark	\$1749
TOSI	HIBA
321 S/L	\$519
351 Model II	\$899
NE	EC
P6	
3550	
P5XL	
P7	
P9XL	
8850	
IB	M
Proprinter	\$399
Proprinter XL	\$549

HEWLETT-PACKARD

SOFTWARE

JOITWARE
Crosstalk \$109
D Base III Plus \$389
Framework
IBM Displaywrite IV \$359
Lotus 123 \$319
Managing Your Money \$115
Microsoft Word \$259
Multimate Adv. II \$269
Norton Utilities \$59
R Base System V \$389
Smartcom \$49
Symphony \$429
Ventura Desktop Publ \$575
Volkswriter III \$145
Word Perfect 4.2 \$205
Wordstar 2000+ \$279

MULTIFUNCTION **BOARDS**

Everex Magicard 384K	
AST 6 Pack w/384K	\$169
AST 6 Pack Premium w/512K .	
AST Advantage	\$299
AST Rampage PC w/256K	\$259
AST Rampage AT w/512K	
Orchid Tiny Turbo	
Intel Above Board PC	\$249
Intel Above Board PC P/S	
Intel Above Board AT	\$349
Intel Above Board AT P/S	\$369
Irma Board	
AST 5251-11	\$529

MODEMS HAYES

1200											
1200 B											
1200 B											
2400											
2400 B											\$469
Everex	300/1	200	w/	S	of	ity	w:	1	æ	٠.	\$109
Everex	2400	inte	rna	ď.							\$199

CHIPS

ı	64K Ram Chips 9 for \$11
ı	256K Chips each \$2.95
ı	8087-3
ı	8087-2
ı	80287
ı	64K Ram Chips 9 for \$11 256K Chips each \$2.95 8087-3 \$106 8087-2 \$144 80287 \$155 80287-8MHZ \$255 80287-10MHZ \$305 80387 \$598
ı	80287-10MHZ \$309
ı	80387\$599
١	

* ISSUE HIGHLIGHTS * MICROSOFT MOUSE SYSTEMS

AST RAMPAGE AT W/2 MEGABYTES \$539
EVEREX 300/1200

Computer

NEC MULTISYNC MONITOR \$549 SEAGATE 20MB

BUS MOUSE \$119 MICROSOFT

MOUSE \$106 135 WATT **EPSON PRINTER STAND** W/PRINTER PURCHASE \$15

MODEM W/SOFTWARE \$109 Arlington

HARD DISK KIT \$319

SERIAL MOUSE \$129

D BASE III POWER SUPPLY \$389

FOR ORDERS & SYSTEMS QUOTES

CUSTOMER SERVICE AND IN ILLINOIS 312-228-6333

SHIPPING 312-228-6333 TECHNICAL ASSISTANCE 312-228-1470

Prices and Availability Subject To Change Without Notice

Products, inc. ARLINGTON HEIGHTS, IL 60005

PCM915

Orders processed same day! Full one year factory warranty!



Mention this ad for a FREE 6 ft IBM cable with purchasel



Model	Price
LX800	*179
FX86e	
FX286e	
EX800	
EX1000	. *499
LQ800	•449
LQ1000	
LQ2500	. *875

AST Premium/2<mark>86™</mark>

A New Standard of Performance and Price. What gives the AST Premium/286 its name? For starters, it aperates 50% foster than an 8 MHz PC AT** yet maintains full compatibility with standard PC and AT-based enhancement cards. Which means that when you buy the 10 MHz, 0 Wait-State Memory Access MS-DOS* and Basic* Software included IMB Factory-Installed RAM, Expand. to 13MB AST FAST RAM Enhanced Memory Card



Which means that when you on fastest computer on the market, you all provide for an expandable and upgradeable future, easily accommadatis the next generation of IBM enhance Senal and Parallel Parts
 1.2MB Floppy Drive 101-Key Keyboard
 Seven Expansion Slats including two
 AST FAST slats

Model 80-512K FAST RAM 1.2MB Floppy Drive . . . \$1295 Model 120-20MB Hard Disk 1.2MB Floppy 1MB FAST RAM Model 140-40MB Hard Disk 1.2 Floppy 1MB FAST RAM AST 3G EGA Card \$2295

n die Norton Jaliese. Verson 30 Sprints AST and AST rep AST Resource Sta replantation AST Resource for State region







Send chack, maney arder ar P.O. to. P.C. Pitstop, 4517 West Lake Street, Minneapolis, MN 55416





WHY WAIT? CALL COMPUTER DISCOUNT WAREHOUSE™ NOW!

CDW 987 PC

(312) 498-1426 (312) 291-1737



NOW \$169

OAVE OVED COO

SAVE OVER 60%

EGA DELUXE



EXTENDED EGA/CGA/MDA & HERCULES, 132 COL. & AUTO SWITCH

752x410 MAX. COLOR RESOLUTION

\$239 WHILE SUPPLY LASTS

48MB HARD DISK

WITH CONTROLLER
NOW ONLY

439 FOR YOUR

PC/XT/AT

VISIT OUR ON-LINE CATALOG

CALL OUR DATA-LINE USING YOUR MODEM AND READ DR DOWNLOAD OUR CURRENT CATALOG. 300/1200 or 2400 BAUD. 8-BIT. 1.STIP NO PARTY (80% 884.0279)

> VOICE TELEPHONE (805) 656-3741

CIRCLE 527 ON READER SERVICE CARD



- PC MAGAZINE, November 11, 1986 \$589 EPSON LC-1000 180 cps DOT MATRIX

Order now and receive a FREE Universal Printer Stand with the purchase of each LQ-1000 or other EPSON printers listed here — a \$29.95 retail value! Hurry —

quantities are limited.

LX-800 \$187 FX-86e \$342
FX-286e \$475 EX-800 \$409
EX-1000 \$542 LQ-800 \$475
LQ-1000 \$589 LQ-2500 \$942

EPSON printers are not only great values, but each comes with a one year warranty. Add \$6.00 per unit shipping and handling. MA residents add 5% sales tax. Order today: check, money order or COD.

Compu-Print 30 Sears Road • Milton, MA 02186

Toll Free Outside MA: 1-800-543-4307 In MA: 617-696-0109 EPSON is a registered trademark of Serko Epson Corporation

CIRCLE 228 ON READER SERVICE CARD

For Buyers Only...

We realize that many of you prefer to buy from direct marketers because it's faster, more convenient and more economical. So PC Magazine's Direct Marketing Connection is for buyers like you.

This section will help you get the products you need. This is the first place you should look when you're making your purchasing decisions. And given the amount of Duyling you will be doing in the next 12 months*, (i.e., 65% of subscribers plan to buy monitors, 75% printers, 61% add-in boards and 61% mass storage products) this special section will help you quickly find the products and services you're looking for.

*1986 Plan To Buy Study





Leprechauns Love Bargains

Seagate

Shamrock 286'0



It's a private label version of the Tatung TCS7000 Standard equipment includes Intel 8028640 MHz — Norton Si rating 101 — B slots

Intel 80289-00 MM2 — NOTION STATING TUT — B SIDTS —
ROOM for 1 full-height & 5 haif-height of drives —
220-watt power supply — Sertal/Parallel/Clock — 12MB floppy with floopwhD controller — Maximutch 84 key keyboard — 640k RAM — MS-DOS 3.2, GW-BASIC, & documentation: Options: 1/MB on motherboard SSO, 101-key keyboard SSO.

Shamrock 386 \$2395

intel 16MHz S12K motherboard, HD/Floppy controller, 12MB floppy. 101-key RT style keyboard.

floppy tape backup

Priviste label, same as Sysgen TF742
 Plugs into Floopy controller in PC or AT
 Backs up 2MB/mm in AT, 5MB/mm in PCXT
 Up to 42 MB per cartridge
 SCOM & Novel Network Compatible

. Menu Driven software with Online held 1 year warranty



2400 MNP modems 1200



 Non volable memory retains con
 MRROR I Software, a S69 value confrauration Incernal fits in short slot
 If or harden cable 535 queryly model



 500 or 1200 bps speed Hayes Smartcom II compatible Line busy detect and auto redu
 MIRROR If software, a S69 Value . Made in USA by Franklin Telecom

768K ems \$149

• 768K of 120ns RAM Lotus-Intel-Microsoft compatible
 Can backfill to 640K, remainder as EMS

. Short slot rand • 1 MB piggyback board option \$169 . Pop-up window print spooler, and RAM disk software

1-year warrants Shamrock ega card

 ECA, CCA, MDA, & Hercules Compatible
 Short Card, 5.25" long
 OEM version made by Paradise 2-year warranty

ENHANCED VERSION \$249 64Dv480 resolu . 152 column Lotus 1-2-3, Symphony, etc.

PC/XT hard disk kits

. Drive & Controller pretested, and formatted 30 page instalation guide & reference manual
 Cables, mounting screws, full & half-height besels
 10R "DOS Shell" Hard Disk Drganizer Software
 1year parts and labor warranty 50 Day Money-Back Satisfaction Guarantee Optional 150-with LL/FCC approved power supply \$69

20 mb kit

 Seagate ST22S—214 MB—Half Height— 148 watts—65ms . Seagate Controller, Add S1D for Wests

30 MB kit

. Seagate ST258 51S M8-Half Height-148 watts—65ms

• Western Digital 27x short slot
High Speed RLL controller

40 MB Kit Seagate ST251 428 M8 · Pre-formatted into a pair of 21M8 partit . Seagate Controller, Add S10 for Western Digit

65 MB kit . Seagate ST277 65 SM8-Half Height

. Pre-formatted into a pair of 32MB partitions, 28i . Western Digital 27x short slot High Speed RLL Controller

Scribe 32 gard

• 1 year warranty

\$459 . 1DIR hard disk • 327 MR High Speed LL 2.7 Drive . Low power-14 watts 68 msec Average Installation instructions

ScribeCardAT 32MB \$555 floppy drive kits

 720K internal for PC/XT/AT, \$129 144MB internal for AT only, \$149 Universal mounting kit Requires DOS 3 2 or S1S optional driver software

Access Time

EH

AT hard disk drives

. Includes AT mounting raits & data cable 1DIR Hard Disk Drganizer Soft
 Includes large drive software
 Formatted & Tested

Model Speed Capacity Orine Seagate ST2S1 Seagate ST4096 Micropolis 133S 42 BMB 80 2MB 71MB Priam \$19 117MB Maxtor 1140 27ms 117MR 52295 Pnam S19/Award 20ms 1S9MB \$2395

TERMS

- No extra for shipping. Visa/Mastercard
- 30-day money-back quarantee
- Corporate & institutional PO's accepted.



TOLL FREE 800-722-AT-XT CALIFORNIA 805-373-7847

SHAMROCK COMPUTER 2509 Thousand Oaks Blvd, Dept. P. Thousand Oaks CA 91362 CIRCLE 184 ON READER SERVICE CARD

Wall State | History

THE CORPORATE SOURCE

м - 1 т

LAPTOP COMPUTERS TOSHIBA

T1100+ \$1.595 T3100 \$2,995

ZENITH Z181-93 \$1,795 Z183-92 2,499

SHARP PC7000A 1,495 PC7100 2,495

> ACCESSORIES TOSHIBA

EXT.5 1/4" FD \$399 159 INT. 3 1/2: FD KIT INT. MODEM 349 SHARP MEMORY EXPANSION \$ 99 COLOR VIDEO CARD

249

89

99

329

MODEM 299 CARRY CASE 99 ZENITH MODEM 349

EXTRABATTERY PACK SOFTWARE

CARRYCASE

BROOKLYN BRIDGE \$ 129 CARBONCOPY 129 WORDPERFECT EXEC. 149 dBASE III+ 399

 Net Terms to Qualified Accounts • 24 Hr. Shipping • Competitive Price Volume Discounts

LOTUS 123 VER. 2.0

1294 W. Cty. Rd. 42 • Burnsville, MN 55337 (800) 255-4012

Best Prices Best gervice

HARDWARE COMPUTERS FROM AST. ATARI EPSON & PANASONIC.

PLUS IBM COMPATIBLES CALL 99 AST Hot Shot/286 209 SulPak Plus 384K Evercorn 2400 CALL SkiPok Premium ... 169 RAM Oued 50/60 Haves Moderns Microst Popular Modern Prochool Modern 1200 105 Above Board PC 179 Above Board 286

Hercules Graphics + 259 Seogote 20MB Kit. 169 Seogote 30MB Kit. Evenex EGA Enhancer Genoo Super EGA 384K RAM Cord 295 Separte ST251 89 Handcard 40 MB 439 File Safe 40 MB TAPE Advantage Premium OTHER HARDWARE EPROV FX-84-E CALL Summasketch 1201 FOR LOWEST Tiger Toblet II PRICE Sweet P600 LUEL/LO

169 Arnow 410W 619 Arnow 1290 w/cord 445 Amork 722 195 NEC 1401 Multi-Sync Panasonic 10801 1092//1524 3131//3151 195 NEC 1401 MARE 319/595 SOMY MONITORS 259/419 Somsung Ambe 1369 Toxon 770 4450 Lose SOFTWARE--ACCOUNTING - - SPREADSHEETS

BPI Gen. Acct 169 Boeing Coto Complete Bus, Actho 159 Lotus/Symphony 45 HAL 479 Mosaic Teen 2 CALL PFS Pro Plan New Views Open Systems CALL Plan Perfect --- DATABASE OALL WORD PROCESSING 59 Advantage II 259 disea It Plus

CALL 279 CALL Office Writer R Bose System V CALL Word Perfect 87 PFS First Choice. Reliex PES Pro File 139 PFS Pto Write . 215 Wordstor 2000 Plus Wordstor Pro - GRAPHICS -UTILITIES Birne 239 -Howard Pro Publisher Quick Borse

Turbo Poscal/Besic/C Euroka The Solver Descurew 2.0 Auto Switch 200 Windows 175 Brookin Brid Boeing Groph Diagraph 2000 EGA Point V2005 259 Crossoli MK 59 DS Bookup + 95 Inwest Crosstofs MK N Inword reetonce Plus 339 Metro coph in the Box Marge II Norton Unines A

229 Dr Hote II w/Mouse 800-662-2686 orders only for Ca. Orders, Tech Support 415-668-9350

ProDesign II Show Partner FX

Disk Ophraze Xree

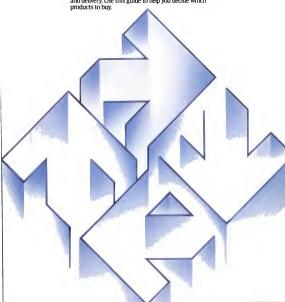
Call or Write for Free Catalog IENE No Fee For Visa, MasterCard, Cashier's Checks, onal Checks with 2 week hold, Guolified F.O.s. CA orders and soles has a week rank declared or order. St. min. UPS Blue-3% of order, \$5 min. UPS Blue-3% of order, \$7 min. Printers, Monitors, Computers — Coll for



584 CASTRO ST., SUITE 487 SAN FRANCISCO, CA 94114 ston of MCSS inc. Computer & Softw



The PC Buyers Guide to Products and Services
This is your showcase—your direct source of information
on PC products and services. PC Magazine Marketplace
gives you quick access to exactly what you're looking for,
plus information regarding price, discounts, specifications
and delivery. Use this guide to belo you decide which



Now! More Ways to Take the Law Into Your Own Hands.

The LegalEase* concept is designed to give you constant legal assistance without constant legal fees, it's a program created by one of the best legal minds in the country so that you can generate the forms, agree ments and documents you need, right on your own PC. Any IBM or PC compatible plus any standard word processor including WordStar" and Multi-Mate" are all you need to add law and order to your business or personal life. LegalEase will do the rest. Comes with a FREE COPY of PC WRITE and has a 30-day money-back guarantee



The menus are easy to follow and will direct you to the right legal document for the job. You will be able to choose from a wide selection of standard legal forms and edit them according to your needs. The system was created by Boston attorney Richard H. Gens with 34 years of drafting and enforcing legal documents. The extensive choice of contracts, agreements, leases, notices, waivers, eleases and binding business forms were compiled to cover most any situation that



might arise in your business or personal dealings. The LegalEase Program is designed for small to medium size businesses as well as for personal use. It contains over 150 time tested documents to give you the legal assistance and solid protection you need The Real Estate Module is customized for this speoffic industry. This supplement contains a wide choice of documents needed for purchasing closing, leasing and all of the other specialized activities of the real

> The Corporate Module is created for both large and small businesses. It contains over 80 forms and documents

pertaining to the needs of a more corporate organization. These forms contain by-laws and minutes for voting, benefits, corporate structure, mergers and purchases.

All of the LegalEase programs provide you with continuous legal help for one initial cost. If you consider the time and money spent on an attorney for each one of these tasks you will understand how LegalEase will pay for itself the first

Give your PC a legal degree with LegalEase, today Ask about the new High-Tech Module of LegalEase.

by bank draft, payable in US dollars drawn on a US bank



please send me LegalEase** at \$129.95 @ Real Estate Module at \$99.95 ☐ Corporate Module at 999 95 ☐ SAVE NOW by ordering any combination of packages and take \$10.00 off each Module POSTAGE AND HANDLING: Single packages add \$7.50. Combination packages add \$10.00. All packages include your FREE copy of

e and have a 30-day money-back guaranteel (Mass. residents add 5% sales tax.) ☐ Enclosed is my check/money order. Charge to my □ Visa □ MasterCard □ American Express

NO COD'S OR PURCHASE ORDERS. Outside USA add \$10 per copy and make payment by credit card or

Address

1-800-628-2828 Ext. 706 For faster service, call us at (617) 651-188

LegalEase* is a Trademark of HDG Software, Inc. Copyright 1986, HDG Software, Inc. LegalEase* requires an IBM® PC, XT, AT or compatible, MS DOS 2.0 or higher and 128K RAM.

Not copy protected CIRCLE 325 ON READER SERVICE CARD

Not Sure About A Product Or Service You've Seen Here?

Then why not fill out the reader service card right now, send it to us, and you'll receive more information directly from the vendor or manufacturer.



10 SECONDS TO FIND ANY INFORMATION ON ANY DISK





INTRODUCTORY OFFER

When you purshase I set of the ACCESSAFILE COMPUTER DISK FILING SYSTEM (one Computerisid and FILING SYSTEM (one Computerisid and one Transfer Files) we will send you at no cost a box of ACCESSAFILE HIGH PERFORMANCE DISKS of your choice. ACCESSAFILE HIGH PERFORMANCE DISKS are selected from the highest chipping levels in the industry and carry the Considiant reputation for quality and stability up to \$35.00 U.S./box depending on type you need).

YES, PLEASE SEND ME:

Accessafile Computerside 6 \$46 95 U.S. each \$ \$ 40.95 U.S. each \$ \$ 540.95 U.S. each \$ \$ 540.95 U.S. each \$

ACCESSAFILE

CANADA CORPORATION
CANADA CORPORATION
CANADA CORPORATION
Editorion Alberta Canad

16815 - 117 Avenue Edmonton, Alberta, Canada TSM 3V6 Phone: (403) 455-4113 Desler inquires welcome.





We offer an integrated family of software products that allow you to search the Bible as never before

With "THE WORD Processor" software (which includes the complete text of the KJV or NIV Bible) you can create indexes on key words, phrases, even concepts, as well as search, display or print, for just \$199.95. Greek and Hebrew Transliterator products which include Strong's Concordance are also available. Or choose from a host of other exciting Biblical software products available in varying price ranges.

So if you're still searching, give us a call. We're anxious to show you how your PC can help you access your Bible as never before.

EIRIGIRESEARCH SYSTEMS 2013 Wells Branch Parkway, Suite 304 Include \$3.00 for postage and handling. For Apple, IBM Pt Commodore 64, TRS90. Machineh, CPM 2.2, MS DOS tin. Texas 78728 (512) 251-75-41

CIRCLE 341 ON READER SERVICE CARD



Since 1982, Flagstaff Engineering has supplied thousands of conversion systems to customers in more than 50 countries worldwide. We manufacture and deve a vast array of specialized conversion products for the PC/XT/AT and the new PS/2. With our "SCANNING CONNECTION" systems you can scan images and text for use with your desktop publishing system and convert images to text using our OCR software. Our "DISKETTE CONNECTION" systems can read and write most 31/2", 51/4" and 8" diskettes. We have developed over 100 programs to transfer word processing, typesetting and data files from thousands of computer systems. Our "TAPE CONNECTION" systems can read and write 1/2" 9-Track 800/1600/6250 BPI magnetic tapes from mainframe computer systems. Our new FIFO tape controller card can transfer tape data at rates up to 400 Kb/sec. For information on our products or prices please call us today at (602) 779-3341.

FLAGSTAFF 1120 Kaibab Lane ENGINEERING Flagstaff, AZ 86001

If You're An Advertiser...

Here's where your ad belongs. This is exactly where serious PC buvers do their looking, comparing and buying. So you need to be here when they shop.

After all. PC Magazine delivers the largest audience of brand specifiers-the business people who are called upon to determine brands and models of PC products to be purchased by their companies.

You get a circulation of 425,000, the lowest cost per buyer in the industry, and 15% off the general advertising rate. Don't let a closing date slip past you. Be in the Big Book, it's where you belong.



NEVER FORGET ANOTHER COM

Never forget another com-mand with PC-DocuMate* templates to remind you. we time and end frustra-

nbecause commands and formats are at your fingertips for quick and easy reference.

SMA's expertly designed, two-sided plastic templates are easier to use than booklets or reference cards. The data is complete, it's prope organized to help you, and

it's available at a glance. Over 500,000 PC-Docu Mates are in use today-at home, and at work in America's major corporations-like BM, AT&T, GM, Kodak, GE, Exxon, Xerox, Citibank, and hundreds more.

So order your PC-Docu-Mates today with confidence and join our thousands of satisfied users—who never forget a command.

Attention Corporate Cus tomers: Call for quantity discounts or quotations on custom templates to meet your special needs.

Select templates by program and keyboard style, Call for other software not listed here. able 2 0 Mi Base 5000 SYSTEM V phony lasWrite 3 is Mattuscript roSoft WORD

st call for more: Keyboard styles as allable: = IBM PC PC/XT, COMPAQ = IBM PC/XT

NO-RISK FULL 60-DAYGUARANTEE

Ask your Computer Dealer or to order by credit card call toll-free

(indicate template models on keyboard style chart Shipping and handling add . . . Foreign orders, except Canada add \$20.00 Canada and Puerto Rico add \$4.50. or fill out the coupon: North Carolina residents add 5% sales tax

TOTAL AMOUNT. □Check:Money Order Enclosed □MasterCard □Visa □American Express □Chor:e

U.S. funds only. No CODs. Be sure to indicate keyboard style on listing and include with order

CIRCLE 158 ON READER SERVICE CARD

Not Sure About A Product Or Service You've Seen Here?

Then why not fill out the reader service card right now, send it to us, and you'll receive more information directly from the vendor or manufacturer.







---- o DYARTU NEW 3.5" DRIVES allow you to bring your system up to "State of the art" enhancement. You can exchange data with USM PC convertibles and other newer systems. You can backup hard data data using half as many diskettes as you would need with the MS-DOS" BACKUP cultily.

AM'S 3.5" DRIVES UTILIZE MACH 3.5, the newly designed levice driver software and formatter. MACH 3.5 allows faster perfor-nances in read/write access and format capabilities and RUNS ON ANY DOS 2.0 or later.

Iso included with J&M's 3.5" drives is a copy of ARC, *** the acclaimed file compression and backup utility.

3.5" INTERNAL DRIVE W/MACH 3.5 3.5" EXTERNAL DRIVE W/CASE, PS, CABLE AND MACH 3.5

MACH 3.5 device driver software and formatter may also be purchased separately for use with any 3.5" drive. Only \$29.95! We accept Visa, Mastercard

nd prepayment. Or we can ip COD for certified check

uerque, NM 87123

CIRCLE 491 ON READER SERVICE CARD



TANDY AMERICA'S

COMPATIBLES YOU WILL BE PLEASED

ONE CALL DOES IT ALL

within 30 days few

CALL TOLL FREE FOR ORDERS:



CALL FOR DETAILS AND PRICING ON TANDY'S NEW COMPUTER PRODUCTS



Save on TANDY, Epson and Okidata Printers!

Save on all your TANDY, and n-TANDY software needs!

228 MAIN, MONTROSE, COLO, 81401 HOURS 9-5 MST, MON.-FRI.

CIRCLE 255 ON READER SERVICE CARL

More And More PC Marketers Are **Turning To** The Big Book...

Because PC Magazine delivers 425,000 brand specifiers who know exactly what they want to buy. They just need to decide who to buy it from.

So why would you think of not being seen in even one issue? Especially at 15 % off the general advertising rate. Be a regular in the Big Book.



Add-Ons For The Blind

What you add on to your computer, if you're a blind operator, is almost more important than the computer itself.

Scanners, modems, braille printers, speech synthesizers, braille output devices and a host of other peripherals are described in "Add-Ons: The Ultimate Guide to Peripherals for the Blind Computer User."

The product reviews contained in this book are written by those who know them best - blind computer users.

\$16.95 for braille or cassette / \$19.95 for print

Send orders to:

National Braille Press Inc. 88 St. Stephen Street, Boston, MA 02115 (617) 266-6160

NBP is a nonprofit braille printing and publishing house.

HOW TO SUCCESSFULLY BUY THROUGH MAIL ORDER AND PROTECT YOUR RIGHTS

Mail order sales are governed by rules of the Federal Trade Commission (FTC) and various state laws. These guidelines are published as a service to you. Remember, the many vendors advertising in PC Magazine are eager to serve your needs.

FTC rules say:

1. The Seller must ship your order within 30 days of receiving it, unless the advertisement clearly that is it? I take longer.

states i'll take longer.

2. If it appears that your order will not be shipped when promised, the Seller must notify you in writing in advance of the promised date, giving a definite new date, if known, and offering you the opportunity to cancel the order with a refund or consent to a definite delayed shipping date or an indefinite

delay.

3. The Seller's notice must contain a stamped self-addressed card or envelope with which you can indicate your perference. If you don't nespond to this notice, the Seller may assume you agree to the delay, but must either ship or cancel your order within

30 days after the original

shipping date promised or required. A prompt refund must be made when an order is cancelled.

 Even if you've consented to an indefinite delay, you retain the right to cancel the order at any time before the item has been shipped.

Set in supped:

If you choose to cancel an order, that has been paid for by check or money order, the Seller must mail you a refund within seven business days. If you carcel an order for which you paid by credit card, the seller must credit your account within one billing

seller must credit your account within one billing cycle following receipt of your request. Store credits or vouchers in place of a refund are not acceptable. 6. In the event that the item you ordered is unavailable, the Seller may not send you substitute merchandise without your

express consent.

TIPS WHEN ORDERING When ordering by mail:

When ordering by mail: State precisely what merchandise you want, specifying details such as model, make, size, component parts, etc.;

Confirm the price and expected delivery date as stated in the ad;

Indicate whether you will accept a substitute product if the item you ordered is unavailable, and, if not, that your payment should be returned;

Don't send cash, you will have no record of payment if a problem arises, and;

Keep a copy of your order and all other correspondence with the Seller. Your records should include the company's name, address and phone number; a description of the item ordered; your cancelled check or a copy of the money order; record of the date you mailed the order; and any sales slips and shipping receipts.

When ordering by phone: Note the time and date of your conversation and the name of the person you talk with:

Make a record of your order, the price, its promised availability and the components to be expected; Save all correspondence associated with your order, including your cancelled check or a copy of the money

order, and any written confirmation sent by the Seller. Questions you should consider asking:

Does the advertised item come with all necessary parts and accessories? Are they

from the same manufacturer? Is it available for immediate shipping?. If not, when will

it be available?

Has there been an increase in the advertised price? What warranties does the item carry? Who provides the

service?
What is the Seller's return policy?

What is the Seller's refund policy?

with whom should you correspond if there is a problem?

IF YOU HAVE PROBLEMS;
If you have not received
your order as promised or if
the item is detective, immediately notify the Seller in writing referring to your order by
description, price, date, as well as by account number
and order number, if available. Make sure you keep a
copy of the letter.

2. If you complain by telephone, send a follow-up leiver to confirm what was said. 3. If you think the merchandise is defective, reread your product instructions and your warranty carefully to be sure you don't expect features or performance the product instructions and it is not a followed by the product instructions and it is not a feature of the product in the seller for instructions. Don't return it to the Seller until you have been instructed to do so.

4. When returning merchandise make sure you keep the shipper's receipt or packing slip; your right to be reimbursed for postal cost is determined by store policy 5. If you have completely discussed your problem with the Seller and are still not satisfied, write to the consumer complaint agency in the Seller's state. If you paid for the merchandise by credit card, you may have rights to withhold payment under a Federal law called the Fair

Credit Billing Act.

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

HARDWARE	SOFTWARE cantinued	SOFTWARE cantinued	MISCELLANEOUS
ADD-ON-BOARDS 477	BUSINESS 483, 484	MANUFACTURING 491	ACCESSORIES 499
CABLES	BUSINESS PROJECT MANAGEMENT484	MEDICAL	BAR CODING 499, 500
COMMUNICATIONS . 477, 478 COMPUTER	BUSINESS TIME MANAGEMENT484	MULTI-USER SYSTEMS	BUSINESS OPPORTUNITIES500
SYSTEMS 478, 479 DISK DRIVES 479	COMMUNICATIONS 485	MUSIC	CATALOGUES500 COMPUTER
DISKETTES 480	CONSTRUCTION 485	OPERATION SYSTEMS	INSURANCE500
EXPANSION UNITS480, 481	DATA BASE	PREVENTATIVE MAINTENANCE 492	COMPUTER LEASING COMPUTER SERVICES . 501
MONITORS	DATA MANAGEMENT	PUBLIC DOMAIN 492, 493	COMPUTER TRAINING
PERIPHERALS481	DESKTOP PUBLISHING 485, 486	REAL ESTATE	CONSULTANTS
PLOTTERS	DEVELOPMENT TOOLS	RELIGION	CONVERSION SERVICE
PROTECTION	EDUCATION487	MARKETING	DATA CONVERSION501 DIGITIZERS
PRINTERS462	ENGINEERING 487	SECURITY494	DISK CONVERSION 501
SECURITY	GAMES487, 488	SERVICES	DISKETTE COPY SERVICE501, 502
SPEED DEVICES 482	FINANCIAL	SHAREWARE 494 STATISTICS 494, 495	EMPLOYMENT OPPORTUNITIES
	GRAPHICS 489, 490	TAXES	FURNITURE
SOFTWARE	HEALTH	TERMINAL EMULATION 495	MAILING LISTS 502
ACCOUNTING 482, 483	INVENTORY 490, 491 LANGUAGES	TRAINING 495	NETWORKING502
ARTIFICIAL INTELLIGENCE 483	LEGAL491	UTILITIES495, 496, 497, 498	PUBLICATIONS 502 SUPPLIES 503
BACKUP SYSTEMS	MAILING PROGRAMS 491	WORD PROCESSING 498, 499	USED EQUIPMENT

Advertising Rates and Information: PC Magazine Classified Marketplace

PC Magazine Classified Murketplace is a special economical section for product and service listings. Listings are grouped by category and sold by column inches. Second color option available. Standard Directory Listings are also available for a minimum of 4 issues at \$360 per issue (\$1440 total). For additional information call 212-503-5115.

PC Magazine Classified Advertising Staff One Park Avenue, New York, NY 10016 (212) 503-5115

Advertising Directar Kathryn J. Cumberlander Sales Manager Daniel L. Rosensweig Sr. Advertising Coordinatar Monica Dixon Advertising Coordinatar Angela Kiffin Sales Assistant Linda Annis Productian Manager Anne Brockinton Productian Caardinator Wendy Long Account Managers

NJ. DC. MD. KS, ND. WA, SD, ALL CANADA

Territory g. 4— Glorida Campheld (12) 884-511 CT., S.C., N., N., W., O., R., Y., T., M., N., W., N.N. Territory g. 2— Paul Klein (12) 883-5156 L., M.O., C.H., H., R., Y., N., W., M., S., L., A., M., M.E., U., M.N., TX Territory g. 3— Demonit Leavey (12) 593-5176 CO., M.T., U.T., C., O.R., D. T., C., C., ZIS 50000 & UP Territory g. 4— Ellion (12) 88-5175 A.Z., C.A., N., P., L., K., N., W., O.H., C.A. ZIS 59999 & DOWN) Territory g. 4— Ellion (20) (12) 88-5175

HARDWARE/ADD-ON BOARDS

FAST 88 CHIPCLOC AST HOT SHOT Makes your PC Editor's Choice

■ Needs no slot ■ Select speed by switch or software ■ 100% compet-ible with all software ■ Works with 8087 ■ 7.38 Mhz ■Norton = 2.8 FAST 88 without CPU FAST 88 with 8088-2 FAST 88 with V20-8 \$119.00

IN A CHIP

ry plug-in **III** 10-year battery ver set date/time again sict needed **III** 100% competit 1-800-722-2353

CHIPCLOK whohere NOW \$49.00 1-312-529-2552 in II FAX: 1-312-894-6048 COMPUQUEST Engineering Inc. SCISNIPPERRO, B. 60183 ORGER SHI ON RE

Give your PC a 10 Mhz 80286 ■ Norton SI = 10.3 ■ EEMS compat ■ Intel 80286 CPU at 10 Mhz ■ Fits into short slot

■ 16K bytes Cache memory ■ Software "hot key" to use 8088 ■ List Proce \$845

Call for our Low Price!

NEC SAP-10

A plug-in board for fully integrated voice recognition and audio response

Affordably-priced of \$599, comes complete with version 1 10 software and

NEC

NEC America, Inc.

New Products Dep

8 Old Sod Farm Rd. Mehille MV 10747

546/753-7361

OF MA ON BEADER SERVICE CAR

5384

5516

\$563

\$365

\$ 99

1987

• For ISM PC and competitive With meno-driven softwore, users crede of vocabulary which defines spoken injusts and keyboard chandrals for output. The SAR-10 recognizes 250 phones and provides on additional 250 audio-output messages. Microphone-tigeolder set is ovalutate as an option.

BIGM (REAL VOICE Digital Records for your PC, XT, AT or Company op form, with cells, Roughto Timeseving Voice Mail Sy

Hooks Up To Alarm and Detection Sys - Instantly alarts author Bulli-in Autodial

UTH

No mod

Bull's-Eye Telemark
 Powerful & Efficient

 Optional Programmers Toolkit
 Voice & Sound Effects for your programs, demos and tutoriets Complete with Hardware 1/2 card.

vare, phone cable, and ext E 123900 - 5 am (415) 339-TALK

Talking Technology, Inc. 5558 Lucis Ave Sure 301 Oakland, CA 94611 LE SSI ON READER SERVICE CA

A00 4 SLOTS TO IBM-PC The Addicard allows updating your IBM-PC sys-

MERAK INDUSTRIES 8704 Edes

fem by adding 4 more card slots. It easily installs in the 5 slot motherboard providing 8 slots total Accepts many boards including turbo, modern, Topgy or hard disk controllers ram, senal-parallel ports, security & others. Only \$79 00 + \$3 P&H VISA & M/C

Warren, MI 48093 800 231-4310 Ext 768 (MI) 313-562-9768

PC-DOCTOR

Diagnostic and trouble shooting of PC's, XT's, AT's and compatibles without the need of expensive instrumentation is now possible with the PC-00CTOR System.

PC-DOCTOR consists of the following: . RAM EMULATOR PROBE . FULL LENGTH CONTROLLER BOARD CPU EMULATOR PROBE . 40 PIN CLIP-ON PROBE

· PERIPHERAL CARD EMILI ATTR PROBE • 28 PN CLIP, ON PROBE . BOM FMILL ATOR PROBE • 24 PN CLIP-ON PROBE · CINCLE PRINCE

The controller board generates and receives all digital signals required to test the different components on the defective board. It also measures all operational voltages and clock frequencies.

The user friendly menu driven software supplied with PC-DOCTOR steps through

all preprogrammed tests, or allows the user to generate his own test vectors. A MUST FOR THE PRODUCTION, Q.A OR REPAIR SHOP PC-DOCTOR \$1895.00 AT OPTION \$299.00

LINCOM RESEARCH INC. 3127 De Miniac, St-Laurent, Quebei H4S 1S9 Canada Phone (514) 334-5039 Fax: (514) 334-4711 CIRCLE 162 ON READER SERVICE CARD

COMMUNICATIONS

T, AT or PS/2 CTRL-ALT-DE loesn't work, just pur ESET. A must for hore 6 \$24.95 Add \$2.00 for shops \$2.50 for CODs.

IBM RESET BUTTONI

Irata - Reset. 2562 E. Glade Mesa, Az 85204 (602) 926-7969

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

BEST BARGAINS OF 1987! ATAT-

6300 640K 1 Drive Mono \$1239 1200B Internal w Smartcom 11 \$313 6300 640K 2 Drive Mono 51419 1200B External 2400B Internal w Smartcom 11 6300 640K 20 MR Mono \$1619 Smartmodem 2400 External Panasonic-SR Partner 256K 2 Drues \$1195

1200 Halfcard w Crosstalk 000 2 FX-600 2 DR Color \$1199 PC 2400 Plus External Everex 300 1200 BAUD DC4-IRMA

STARFLIGHT TELEMARKETING P.O. Box 685 Nero, West Virginia 25143 1-800-423-7347 Call for additional info on other pro

n other products Dea MC-VISA Accepted

2400 \$179 U.S. Robotics Modern

(FROM HONG KONG): 300/1200 INTERNAL MODEM \$75 EXTERNAL MODEM 300/1200 \$95

300/2002400 \$180 "HAYES COMPATIBLE "AUTO DIAL, AUTO ANSWER FOSTER TECH, (ADD 5% SHIPPING)

PUSTER TEUR, MUDU 279 STITT THE STATE OF THE

PC MAGAZINE . SEPTEMBER 15.

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

COMMUNICATIONS

COMPLITER SYSTEMS



INFORMATION HOST SYSTEM A Revolutionary E-Mail/88S Information Host System now makes the setup of a turnkey On-Line Information & Conrenong Utility incredibly easy This amazing system can be operated inattended, 24 hours a day, and can simultaneously support up to 16 moderns on 16 dial-up telephone lines





1-800-331-0488 OPEN 7 DAYS



Excell 10 MHZ Turbo System

1 drive Fuitsu, 256K RAM monographics, printer port, 150W pwr

Enhanced Keyboards SEAGATE HARD DRIVES 30 MB W/controller \$379 00 FREE HI Res TTL Monitor & ATIXT Kbd

\$1199

Combined hard disk & floory cor

Monographics, Ponter Port, 200w pwr

FREE TTL Monitor & Enhanced Keybox

ADD ON SPECIALS cules compatible 132 col monograp 1-800-992-3552 Free CGA Emulation S 1-713-785-5220 plor Graphics wiParallal Port 640 x 200 GA CARD w/256K Video Ram no 2000 AT 2 Meg Expension Board EXCELL terro 4000 AT 4 Meg Expertaion Board CALL FOR BEST PRICES ON ALL OTHER PRODUCTS!!

COMPUTER SYSTEMS

SHEEN TECHNOLOGY CORPORATION

IS NOW OFFERING A TWO MIPS 80386 BASED SYSTEM FOR UNDER \$4500°

APPLICATION:

EXPERT SYSTEM

- CAD, CAM, CAE, WORK STATION FILE SERVER
- OFFICE AUTOMATION
- IMAGE PROCESSING

CONFIGURATION:

 SYSTEM INCLUDES 40 MEG HARO-DISK, EGA MONITOR, 1 MEGABYTE HIGH SPEED STATIC COLUMN RAM (EXPANOABLE TO 10 MEG), CASE, POWER SUPPLY KEYBOARO, A 1.2 MEG FLOPPY, @ 16MHz

- * FCC CLASS B COMPLIANCE OK
- * VDE 0871B COMPLIANCE OK MS DOS 3.10, 3.20, S C O ZENIX V5

OEMS, DEALERS AND DISTRIBUTORS CALL PAUL SHEEN FOR VOLUME PRICING

(818) 780-9938 FAX: 818-780-9938 FAX: 408-984-6418 CHICLE SSE ON READER SERVICE CARD

grucom. IBM. COMPATIBLES & ADD-ON CARDS PC XT System 4.77 Mhz 2520 PC XT Turbo System 4.77/8 Mhz .

AT System 6/8 Mhz . AT Turbo System 10 Mhz Other options and configurations available, please call Grucom Computer's House 279 S Beverly Dr. Ste 1077 B.H. CA 90212 (213) 934-3627-934-3651 Telex 188208 Answer back TEL US BVHL 1-800-637-0870 CIRCLE SHI ON READER SERVICE CARD

WYSEpc-266 Al WYSE Computers 12W Floors F40K F9-10 Cover.		TERMINALS		TAPE BACKUP	
		MAZE 30	\$289	MODETAIN	
		WYSE 50	\$359	40MS let	- \$
10rd Ser - Par. 00	E 31 BASE	WYSI ID	\$399	40MS Fed	
2108-8801; 2203-10801;	\$1,299 \$1,449	HARD DRIV	ES	PRINT	ISA .
2712-125MHz PC 786-16MHz	\$1,649	GWI 28 ms	\$669	32151, \$494	341E \$4
WYSE MONITORS		75MS Zins a/contr	\$794 \$959	MONIT REC Multiple MAGRIFIEL Mone.	
Sit/sweet		SEAGATE		MAGNANTA RCS	- \$
53) Must.	\$165	II. B. all militate	\$318	MODE	FMS
EXC BER 540-200	5449	17-30 MS e/zosts	\$366	1200 int \$ 96 1	1700 fet \$:
640 FGA	\$559	67-40 MB	\$629	200 bi \$198	

COMPUTER SYSTEMS



board, 12 MB Floppy Drive 40 MB Herd Drive, HI—RES Amber or Green Monochrome monitor

BM PC:AT Compatible W2 DSDD \$1299.00 Fast 286 CPU 6-12 MHZ Hardware Selectable Switcheble AT Space Seving Mini Cese, 512 K expandeble RAM, 12 MB Floppy Drive, HI—RES Amber or Green Monochrome Montor

IBM PC:XT Companible W1 DSDD \$799.00 Fast 4.77-8 MHZ Hardware Selecteble, Turbo

\$4299.00

(703) 440-9444

Mother board, 640K RAM, 360K DSDD, 5150 AT Keyboard, HI-RES Amber or Green Monitor IBM Competible W/I DSDD 3.5 720K DSDD, 384K expendable RAM, Fast 4,77-9.54 MHZ Speed, DOS 2.11, Super Twist

PANTHER COMPUTER

AVAILABLE OPTIONS FOR EACH SYSTEM: NLO 25 CPS Printer \$299,00 360 K Floppy DSDD Half Height \$99.00 30 MB High Speed Hard Dr (Up to 80 MB available) \$179.00 use w Publishing Solution Software

1-515-279-3449 \$99.00 led Software w 7-2-3/W

Backum 40 MB

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS



SPER 7 SATS VISA/MC/At

XT TURBO \$599.00 Cloppy memoritane multon error per 17, 2500 kmm. Sed 50. Florg 1500075 PS. ET Style elide car

DOW NO. Installed add 2000 NO. Installed add force NCN Floogy Setalled Not Installed Note Installed Note Installed Note Installed Note Option Notes Note Notes Not cmi. imptalled Codor Option 1200 Newd Inc. Modern Names compatible, installed AT tyle RD (Sdarps) Edward Style RS (SDarps) MS DOS 3.1 or 3.2 w/memsale Pysmar (many available) Printer Cambis DO/DD NOW Disharter, Na of 10 1 99.00 1 49.00 1 69.00 1 79.00

C#11 COMPLETE SYSTEM
Pully IBM Comp. GUASANTIED \$ 15.00 One year WASANTY 5. Noin Clote, Toxas 77531 265-8764 (8.00an to 5.00pn 265-260 (20x day 7-days a str COMPUTER SERVICES, INC. CIRCLE SM ON READER SERVICE CARD PRINTERS ALPS NEC

BEST SYSTEM BUY

STI 88 \$545 4.77/10MHz/0 wpit/512K RAM 160K FDD/FDD Controller/KB clock/calendar/1 senal, 1 parallel & 1 game port/150W power supply

STI 286 \$1,025 6/10 MHz/512K RAM/220W Enhanced KB/12 MBFDD WD Dual FD/HD Controlle clock/calendar/Phoenix 81QS

STI 386 \$3,465 Other peripherols also available - CALL

Summit Technology PO Box 1702, Austr. TX 78720-1702 800-445-8640

DISK DRIVES

DISK UPGRADE BIOS FOR ATS DUB-14 overrides AT Drive Table to allow any

compatible drive to be attached and fully used with standard AT controllers. Short card uses one half slot includes complete Set-Up routine and low-level format facility. Works UNIX, XENIX, PICK, other OS and networks. NOVELL is fully



GOLDEN BOW SYSTEMS 2870 Fifth Avenue Suite 201 San Diego, CA 92103 (E15) 298-9349

8 INCH DISKETTE SYSTEM Read, write, and formal diskettes from IBM

mainhames, minicomputers, data entry equip-CP/M 8-mch diskettes (many formats). You also can use 8-inch drives for PCDOS files, 1200 KB per diskettel \$1095 complete MICROTECH EXPORTS 223 Forest Avenue Palo Alto, CA 94301

> TO PLACE YOUR AD IN PC Magazine Classified Marketplace Call (212) 503-5115

MARKET . . .

nb fd, 2 SP, 1 DIXIDATA safen

DISKETTES

QUALITY DISKETTES 51/4" DS-DD 100% Certifi

Lifetime Warranty U.S. Mfg . hub ring Add 4¢ For Tyvec Sierves, Labels & Tab Colored 514" DSDD in 16 Diff t Colors

Shipping \$3 per 100 diskeller ine or send your check to AMERICAL GROUP (818) 906-1132 4200 Ventura Blvd Sie 20 Sherman Oaks, CA 91423 CIRCLE SAN ON READER SERVICE CARD

> TO PLACE YOUR AD IN

PC Magazine Classified Marketplace Call (212) 503-5115

1,800,537,1600

hoping \$2.50 per min order\$1.50 each addit for MCVISA accepted

EXPANSION UNITS

BRANDS' LOW SS EXPANSION BOARDS GRAPHIS CARDS AST Stopack Plus (384K) reales Mono. \$199 Color. Sixpack Premium (1M ed Prosync .

Sixpack Premium (1M) ... \$289 Advantage (1M) . \$519 . (3M) . \$929 Rampage (2M) ... \$439 ATI EGA Wonder Auvantage (1M). \$519.
Rampage (2M).
Rampage AT (2M).
Rampage AT (2M).
RAMPAGE AT (2M).
Above PC (2M).
Above 286 AT (2M).
Above 286 AT (2M).
N BOARD 386.
Ousdoord (384N).
MINDERS. Senguis 20, 30, 40, 80M from .\$349 Miniscribe 20, 30, 40, kits . . \$call Plus Hard Card 20, 40 from . \$829 TAPE BACKUPS 6500 Maynard, Everez. FLOPPY DRIVES Tanden 102:\$109...Toshiba...\$109 \$189 1.2M\$139....\$139 MEMORY: 64K...\$12....256K.\$31

ges, Everes CALL Meeters . . . NEC, Amdek, Princeton GR Printers . . . Citizen, Panasonic, Toshiba VLM COMPUTER ELECTRONICS 10 Park Place, Morristown, NJ 07960 (201) 267-3268 Visa, MC Check or COD

DYNAMIC RAMS \$22.00 1Mbit 41256 100ms \$ 4.15 41256 \$ 3.15 41256 150m - 27/5 54258 1000 \$ 695 V4164

\$ 3.35

(800) 892-8889 • (800) 882-8181

.97

DYNAMIC RAMS 256K 2.10 150ns

4464

CALL DRAM (415) 398-2987 Open Mon-Sat: 8-6 All merchandise factory new & 100% All merchandise factory new & 100% quaranteed Policy Prices reflect cash discount and audject to change Parsonal and company checks — 2 weeks to clear. McVisa add 4% more Min order \$10 CA readents add 6.5% pales tax Call

P.O. Box 590127, S.F., CA 94159-0127 CIRCLE 572 ON READER SERVICE CARD

SPECIAL SEAGATE HARD DISK ST-225 20MB w/Cont . . . 269.00 ST-238 30MB w Cont . . . 285.00 ST-4038 30MB ST-251 40M8 . ST-4096 80M8 MINISCRIBE 20M8 Prices Subject To Change

*HOT LINE: 818-333-0193 * FAX: 818-961-4337 A-TRONIC Computer 15703 E Valley Blvd City of Industry Ca. 91744

Hardware/Expansion Units

continued on the following page





FOR MORE INFORMATION OR TO PLACE YOUR AD CALL 212 502-5115 ... MARKETPLACE

EXPANSION UNITS



EXPLOSION 5199-A LEESBURG PIKE 1/280, FALLS CHURCH VA 22041
CINCLE 97 ON READER SERVICE CARD

TC B PROMPT DELIVERY!!!

DEPTIDHER ALS

DYNAMIC (RAN SEZ SO SOCIETY OF THE PROPERTY OF

\$11.25 6.50 6.50 6.50 MINISTREAMER*

Prices start at \$2,995.

JURLSTRR

9621 Irondale Avenue
Chabworth, CA 91311
Telephone (818) 862-5822

Backs up 20MB in 4 minutes on 1 cassette IBM

PCXT, AT, PS/2 Mod 30 compatible. Available in

internal or external 5% inch half-high configuration. Full one-year warranty.

THE TAPE STOP

(603) 893-9255

Hardware

Peripherals

continued . . .

P.O. Box 1741 Salem, NH 03079

2,029 00

A218H 104- 10 dual
A218H 104- 10 dual
A218H 2040- simple
1200 A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 104- 20 dual
A228H 10

19142 VAN NESS AV

TORRANCE, CALIF 90501

514 single 20MB external 514 single 20MB external 514 single 20MB External 514 dual 20MB External 514 20MB Cartridge PC2B Hootable Adaptor 40 MB Internal Tab Piccs Si hips I to Chahte

CIRCLE 575 ON READER SERVICE CARD

PERIPHERALS



Musiciame to PC Deta Trensfer
 High Speed Backup
 All Sothware, Complete System
 Service and Sundord eath

cal (\$18) 343-8565 or write to Coelsoh Competer Corp. P.O. Sox 153 Terzana, Cell. \$13

CONTECH

POWER PROTECTION

MERICK STAND-BY POWER
THE MERICK STAND-BY POWER SYSTEM
provides complete pretector him power failure; brownouts, surges, spikes, and powerfine
noise THE MERICK; stated as one of the top
stand-by power systems on the manieral today,
400 watt system-5448 800 watt system-5456
MERICK, Inc., POWER SYSTEMS DYNSON

Box 298 Frisco, CO 80443 303-668-3251

> THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET...

PLOTTERS



Hardware/Power Supplies

begins on the following page



POWER SLIPPLIES

SPEED DEVICES

50% LESS HEAT! 50% LESS NOISE



POWER COOLING NOISE PRICE 2.01 -50% \$148 500M -22% \$199 90200 AT 100 -67% \$177 All models are FCC & Ut, approved. Each power supply is rigorously tested and backed by our immediate replacement, I year warranty. City I

PC COOLING SYSTEMS

SECURITY

SAFEWARE INSURES COMPUTERS Call toll free for information and immediate

 RUSINESS COMPUTERS HOME COMPUTERS A COMMUTERS OVERSEN

 COMPUTERS YOU LEASE COMPUTERS YOU LEASE TO OTHERS. SAFEWARE, The Insurance Agency Inc. 2929 N. High Street, P.D. Box 02211 Cohembus OH 43002-0211 (614)262-0559-(OH) (900) 849-3469-(SAT)

PC Magazine Classified Marketplace

the ultimate target market!

The brand specifiers who read PC and, their only concern is getting what they need as quickly as possible

They'll DIRECT their attention to PC Magazine Classified

For them PC Magazine Classified etplace's Direct Response Display Ad format represents a fast, easy and cost effective method of lact acquipation. They know it the information they want regarding once, volume discounts, specifica teens and delivery Nyou think that your business can benefit from the 375,000 brand specifiers who read PC Magazine ... YOU'RE RIGHT!

So take DIRECT action and call (212) 543-5115

IBM-AT SPEEDUP

THE HIGH PERFORMANCE SpeedInjector" from Ariel

PC WEEK — "... at the top speed that the system would accept, XCELX nearly doubled the AT's processing speed." — Paul Bonner. Engineering excellence and a proven track record has established Ariel as the industry's recognized leader in AT performance

A tally automatic Speedinector for all Balls Securiting parts according parts are series profile securiting parts according parts according parts according parts according parts according to the parts accor 950 5-13 sett sestable withe currents annothed session better better sestable place of the SCORT better than the S COURT SECRET Speed United The Speed Speed with the SEEK Speed United The Speed Speed United The Speed
FAST 86296-19 - Replacement CPU for speeds of (#CU1-A) \$259.95 10 MHz and above.

FAST 80287 - 8, 10, 12, 14 and 16. Speeds lest Contract of the last (#MP1) \$Cell rated & guaranteed. (ARPT) SCall FAST RAM 125K & 256K, 100NS & 120NS

MEL SPEC CRYSTALS — The Famous Ariel Crystals. Choose from (Crystal) CPU speed) 16/8, 17/8,5, 18/9, 19/9,5, 20/10 MHz. (PCA1-16/17/16/19/20) \$19.95 INCREASE OVERALL SPEED UP TO 300%

Order Line: 800-641-3322 ext. 1110 Direct Line 201-788-9002 FULL 2-YEAR WARRANTY

TER CORPORATION ON ALL PRODUCTS riel Computer Co

ton, NJ 08822

SOFTWARE/ACCOUNTING

Post Office Box 866 A F

The leading fund accounting system for local govis and non-profit organizations. Modules include General Ledger, Accounts Payable, Encumbrance. Obligation Tracking. Accounts Receivable, Payroll, Budgeting, Fixed Assets and Donor Receipts The system supports up to 95 funds, 9999 depts, PC-FUND runs on the BM-PC and most MS-BOS and XENIX computers AMERICAN FUNDWARE INC. PO Box 7779728 Sleamboat Springs, CO 80477

800-551-4458 (303) 879-5770

CLE SECON READER SEC

dBASE ACCOUNTING TOOLS "GENERAL LEDGER "ACCTS PAYABLE "dINVOICER & A/R "SALES ANALYSIS "SERVICE BILLING "DROER ENTRY

"JOB COSTING "JOB ESTIMATING PURCH DRD INVENTORY "PAYROLL \$99 ea+s&h widBASE 2.3 or 3+ Source Code **GATAMAR SYSTEMS** 4875-P Santa Monica Ave. San Diego, CA 92107 (619) 223-3344 Visa-M/C-AMEX-Check-COD

PC-SPRINT PC-Sprint from Exec PC may be the speed demon you've bee

ALSO FOR TANDY 1000/1000A Run your PC. XT or clone at 7.38 mts.

· Speeds up all software -YOU CAN see the difference · External speed switch 6 reset butt · 4 speed sele · Also speeds up your 8087

· "Slotless" plug-in on most PCs · Includes: 90 day money back

58995 V20 add \$10 Call Exec-PC. (414) 242-2173

ACCOUNTING

ACCOUNTING KIT \$79.95 Peanuts & Cavier is a kit designed to introduce the principals of accounting and bookkeeping to non-accountants. It includes a resetable general ledger software package tree. The kit consists of a 300 page book, worksheets, homework, homework analysis and GI software. The soft ware generales detailed reports trul halance income statement and balance sheet. IBM or compatible. Used in curriculums by Platt Colleae, Denver Public Schools, etc. \$79.95 8400 E ILIFF Suite 11

1-800-621-8385 mt 736 SUPER ACCOUNTING IS HERE Complete & easy to use. Order A/R, A/P, ledger, inv , mail list. Modules integrate or stand alone

\$49 per accting module 60 Day Money Back Guarantee Complete manual included Multiinvited. Stop testing your 12 on complicated page-get results with Super Accting Visa/MC. PMC

100 East 2nd Street Microba N Y 11501 800-DUAL-PMC in N.Y 515-294-1400

RBASE SYSTEM V 1.1 USERS ◆Genieger ◆Acct receivables ◆Acct payables transactions, auto check writing, simple enough for households. Powerful enough for property owners Versable enough for any business Data entry by account name with wildcard look Makes if easy without special propertures, \$59.95 +\$5 s/h - Visa/Mastercard

... SOFTWIRE SPECIALIST 5820 PRINCESS OR BOCKEOBO II 61109

800-433-8394/IN II, 815-398-6863



ACCOUNTING



Representing The Leading Fund Accounting Systems (2O8) 882-8175 or (2O9) 333-1575

25% OFF PC-FUND

CIRCLE SEE ON READER SERVICE CARD

just another simple amort pro LOAN SHARK is a comprehensive comnd interest power took Solves with

ALL loan calcs and prints professional amort schedules IRS interest including ding present/future value, effec tive rate of mor toace lean, changing interest rates negative amort, balloon payments passbook calcs w/macro tackity & more! Supports IBM (all models) and most clones!

LOAN SHARK

SOFTWARE Easley Microsystems, Inc. 234 North "D" Street San Bernardino, CA 92461

(714) 381-3379 CIRCLE SII) ON READER SERVICE CARD

CPA Review Pass/Refund You Pass or Wit Payl Over 2.100 computer into active multiple-choice & essay/grablems Call for DEMO & details on the progressive way to study Also CMA & CIA Reviews. New CPE Senes-June '87. IBM PCs & compatibles. Individual, Office and College versions. AMEX,



14 Inventess Drive East, F-10 Engelwood Colorado 80112 (800)/241-9700. in Calorado (303) 799-0099

MIP FUND ACCOUNTING The MIP Fund Accounting System meets the financial and managenal reporting requirements of not-for-profit and governmental organizations. The System leatures multiple fund and fiscal years, user-defined reports and six levels

of account coding Modules offered, G/L, A/P, Al R, Payroll, Encumbrance, Expenditure Budge erue Budget and Lotus/DBase Interface MIF FAS is available for IBM XT and compatibles MICEO MEDILIATION DOOR STO 505 East Huntland Dr., Suite 340

lustin, Texas 7875 (512) 454-5004 1-800-MIP-FUND

EASYVIEW Billing System reak away from other hard to use billing systems. The EASYVIEW Nilling System puts simplicity to work for you and provides complete billing power for your business. IBM POXTUT & Computibles Complete gratem for only \$39.95 Add \$5 physonic and handling

EASYVIEW. INC. Circle P No. 9 Orange, Tx 77630 LE SEA ON READER SERVICE CARD

THE PAYROLL

If you've been looking for a payroll with the power to handle e real job, you just found it. This system is the same one used on system is the same one used on the HP3000 super-minis with leatures you didn't think you could possibly get on e PC...like accruels, 401k plans, user-minist data and special customized date and speci computations, a report write

CORT DIRECTION

cho Mirage, CA 92270 (619) 568-4681 CIRCLE Ses ON READER SERVICE CARD

NCS FUND ACCOUNTING owerful fund accting software for local govits, schools, and other non-profit entities. Syste customized to user needs Modules GL, AP, AR. Encumbrance, Budgets, J-Entry, Chinetig, User Designable Reports Integrates with NCS PRY

ROLL and UTIL/TY BILLING and operates on the 1014 tambs of micros and compatibles NATIONAL COMPUTER SYSTEMS

NATIONAL COMPUTER SYSTEMS, INC. PO Box 9355 As, MN 55441



Menneapors, Min 30440 800-328-6172/612-830-7552

Payroll Systems Restaurant and General

DEVELOPED BY AN ACCOUNTING FIRM

uslems to Meet all Needs Fast Accurate Easy to Lear
 Handles All Tip Situations Generales Quarterly Reports
 Vac/Sick Pay 401 (k) Plans Generates Customized Report

DEMO ANALIADIE \$50 BEFLINDARI F DEPOSIT MS-DOS / PC-DOS

ness & Acc Software Systems, Inc. DER SERVICE CARD

ACCOUNTANT'S CLIENT WRITE-UP \$250

TESTED AND PROVEN IN 100's OF FI TESTEO AND PROVEN IN 100'S OF F
 FAST, EAST TO USE STSTEM
 FOLLY INTERPACTIVE MEN DENDEN
 PROGRAM WITH NELP SCREEKS
 FLEIDRE CHART OF ACCOUNTS
 UNLIMITED DEPARTMENTS
 COMPLETE FRANCIAL REPORTS

AR Cest and Other Special Report
OFTONIAL LOTUS/MEASE INTERFAL
MINE MORD PROCESSOR
APTER THE FACT PATROLL

Federal 941's - State UIC Report W-2's AND 1000's TENTACES WITH OTHER PROGRA

TELEPHONE SUPPORT PRICE \$35000 - MCLEDING PRINTED MANUAL THE PLATEST AND COMPATAN HOWELL ASSOCIATES 4545 BISSONNET SUITE BELLAIRE, TX 77401 (713) 661-8652

ARTIFICIAL INTELLIGENCE

ARTIFICIAL STUPIOITY To understand Artificial Intelligence, you also need to understand the flip side-Artificial Stupidity. Our entertaining software and manual walks you through all 5 stages, starting with Basic AS Written for PC's in C. with source code Mail \$20 (cash or check) or phone orders (COO) to IN CONTROL SYSTEMS, Inc. PO. Box 974 ille, TX 75057

ARTIFICIAL INTELLIGENCE

EXPERT SYSTEMS Confused by expert system technology? Multi-Technologies, Inc. makes it easy with a futorial on rule-based expert systems.

This program consists of three parts 1. An explanation of expert system basics 2. А утай детто 3. You build your own expert system \$24.95 MC/Visa (505) 836-8305 or check to MULTI-TECHNOLOGIES, INC.

PO Box 10598 Albuquerque, New Mexico 87184

BUSINESS PA ITA.PII

Locates 29,000 cities, with graphic display of states. Computes Great-Orcie distances, Finds all states with cities of the same name. Locales all fowns within a given radius. Shows lowns 5 mi either side of a line 40 mi long. Color graphics or monochrome IBM-PC/XT/AT 192K DOS 2.0. Send \$49.95 money order or check.



1932 Hayselton Dr Jefferson City, MO 65101 (314) 635-3417

LPSS - SPREADSHEET LP Our best-selling menu-driven linear program ming system now solves problems with 1000 constraints and 5000 variables up to 30 times

laster New version reads/writes Lotus worksherts. Lise 1-2-3/Symotony as a matrix onnerator or post processor. Many other features including interactive and batch operation. spreadsheet-style display equation oppositor problem/basis storage, file I/O, Simplex restart, report generator, sensitivity analysis. ENows says The flexibility and features of this program are a bargain at its low price" \$149 with 8087 support and 100-page manual \$29 for working demo and mini-manual Eastern Software Products, Inc.

PD Box 15329 Alexandria, VA 22309 (703) 360-7900

DECISION PAO"-NEW!

Be more effective with touch decisions for toucher audiences. Fasy-to-use menu-driven worksheet. Hold fewer better meetings. Act deciswely on uncomplete data. Add sudgement to

spreadsheet analysis. Accessible, practical, selfdocumenting decision technology. Sample templates for evaluating people, purchasing, mar-keting, sales, investing, 256K DOS 2.0+. Introductory price \$99 + \$5 s/h ***** ***** NO RISK 30-day money back. ******

Apian Software, Inc. Box 1224

***** 1-800-237-4565 EXT 102 *****

(817) 430-3626

BUSINESS

▶ timeslips d

POP-UP TIME & BILLING SOFTWARE "Jewel of a Billing Program"—INFOWORLD, RATED 9.3

Perfect for Attorneys, Accountants, Consultants PR/Advertising Track time like a "stopwatch" · Batch enter time/expense data

and ANY service professional. Produce custom business and financial reports

 Over 5,000 professional bill Export to spreadsheets and databases formats with aged receivables, flat fee and more Track retainer/trust account · Ontional GA interface now available

NEW!!! TIMESLIPS III more reports, more capacity, more peed, auto back-up and much more.—\$199.95. Hard Disk

For rush service/more information, call (617) 468-7358. Add \$7 s/h. Not copy protected. 30-day money back guarantee.

NORTH EDGE SOFTWARE COR

Call (800) 225-5669 to order OFTWARE CORP. Hamilton, MA 01936 CINCLE SET ON NEADER SERVICE CARD

PC ORDER PAO

IT'S THE LAW! For Manufacturers, Wholesaler or Retailers MAKE MORE MONEY by automating your order pro-cession bordon. Handles Cash and Charge sales RIGHT TO KNOW with an End-of-Day Cash and Sales Summary TRAINING report Produces a Customer Receipt/Picking sip. Keeps track of inventory. Can easily use BAR COMPLESS SITS 29 CFN 1916.1250 CODE or OCR input. Will Import/Export files in COMPUTAR SEPTEMBA PROCESS FOR ASCII format, EASY & FAST with full on-line HELP was Runs on most MS DOS computers with

optional, Custom modifications & Support TATA SASA MAISTAINS EMPLOYES available Dealers invited. RPS Corporation COLUMBIA SOFTWARE, INC. 10x20 S.E. Hillcrest Drive 355 11th Seeses Alteres, PA 18461 800-443-3521 IN Po 814-942-2833

VEHICLE MAINTENANCE

TUTORIALS SITE STARISATIONS

Maintain records on all types of equipment. Written in compiled language and very easy to use Capture all related cost per item. Reports include ... routine maint , scheduled maint , repair cost, vehicle cost analysis, feet cost analysis, fuel class, fleet status reporting, license *OMNI DATA SYSTEMS** 1000 Executive Parkway, Suite #229 St Louis MO 53141

*(314) 576-5757** *1-2-3" APPLICATIONS*

From the authors of six books on spreadsheet computing, comes this exciting offer. Their Isbrary of over 100 ready-to-run 1-2-3" models. templates and macros is available for sale at the slevably low price of \$2.95 per application Call or send for your free catalog loday last & Flast 680 Farmont Avenue field, NJ 07090

384K, hard disk, 80 col. printer. Cash drawer Portland, OR 97266 (503) 654-7722

*PROFESSIONAL PC TRAINING Effective HANDS-CN training teaches you to use software. Audio cassettes guide you. Listen and Do Eliminate tedious reading, 123 \$89, Sym phony \$99, Framework \$99, Displaywrite 3 or 4 \$89, Wordstar \$89, Wordperfect \$89, Multimate \$79, D6 III Plus \$139, Dos \$89 (visa, MC) S&H DATA MANAGEMENT ASSOCIATES 13035 Olive St Rd Suite 119

file & first choice, prints invoices, statements,

St Louis, MO 63141 (314) 275-8716 PFS: FILE USERS CWS.AIO relational report writer for professional

labels, etc. Items and text anywhere on page, suprepes Manks & Mank lines sort/sub Intal/ page break on four items, labels two or more ross. Best of all, relate up to three files in one report! \$39 check/MO/VS/MC. Clay Watts Software 68C North Loop Cedar Hill, TX 75104 214-291-1171

BUSINESS

Save Legal Fees By Using LegalEase

LegalEase" is a simple, ready-to-use business and legal forms system for IBM® PC's with over 150 time-tested models for contracts, agreements leases, notices and binding business forms. Edit with PC Write** WordStar* MultiWate" or any other standard word processing software LegalEase" is menu driven and was written for non-lawyers by a respected Boston attorney, Richard H. Gens.

NEW! The Real Estate and Corporate Modules of LegalEase." The Real Estate Module comes complete with a wide range of Real Estate forms. The Corporate Module contains all the basic legal forms for corporate meetings. Soon to Follow! The High Tech Module of LegalEase."

LegalEase: \$199.95 (add \$7.50 p&h). Both the Real Estate Module and the Corporate Module: \$99.95 ea. (add \$7.50 p&h). Any combination of packages, take \$10.00 off each package (add \$10.00 p&h).

1-800-628-2828 Ext. 706 ъ

HDG Software, Inc. 54 Whitney Street, Sherborn, MA 01770 For faster service, (617) 651-1881 CINCLE INS ON READER SERVICE CARD

**** Auto-Pliot***** Put your responsibilities on Auto-Plict ToDo list.

sophisticated Tickler file, appointment calendar Tracks employee assumments Jacken items Windows display future, present, and uncompleted past events. Multi-users, multi-files, pe nodic & one time events. DOS 2.0+ PC/XT/AT/ compatible \$29.95 Check/Visa/MC Advanced Concepts . P. 0 Bax 246

honia, N.J 07845 ... 1-800-628-2828 Ext 655 PC BUSINESS SOFTWARE Pournă on Piene Bate

Job Cost: Inventory Time & Material Billing Purchase Orders; Accounting & more As Low As \$175. ABC is AFFORDABLE Executive Data Systems (800) 367-6081 (713) 437-8913

BUSINESS PROJECT MANAGEMENT

EVERYBODY'S PLANNER ewerful tool includes project man

flowcharts with critical path, early & late start & finish dates, 7 reports Pulldowns, 256K Finally. planning tools for the rest of us, \$99.95. Also ELECTRONIC DRAWING \$49.95, DESIGN YOUR OWN HOME-Intenors, Landscape, Architecture, \$99.95 Add \$3.55 s/h ABRACADATA, LTD P.O. Box 2440 Dept. P. Eugene, OR 97402 (503) 342-3030

..... BUSINESS TIME MANAGEMENT

TIME MANAGEMENT SYSTEM "PrimeTime effectively weaves together a collection of tools into an extremely useful and powerful time management resource . Prime Time works, and its worth every mickel," (IntoWorld 8/

25/86), Runs on IBM or computibles in reside or stand alone mode. 30 day money-back-guar antee Not copy protected \$99.95 Prime

WISEWARE, INC. 3176 Pullman St. #106 Costa Mesa, CA 92626

(714) 556-6523 Ext. 102

*** DATEBOOK \$89.95 *** *APPOINTMENT SCHEOULER* ideal for Professionals! Features include help windows, multiple bookings, flexible time intervals. Searches for openings within specified days and time. Supports 20 different schedules. Prints daily applis. IBM/XT/AT competible (w/hard disk). \$89.95 + \$4 sylt; CNs/Visa/MC, MO add

*** EXECUTIVE COMPUTER SYSTEMS *** **** 1571 Fengark Drive **** ***** Fenton, MO 63026 *****

****** (314) 343-5757 ****** · 1. 多次的 · 1. 多数的 ·

公然海岛级

COMMUNICATIONS DATA BASE

MULTI-USER BBS (FOR IBM PC AT)

TEAMate - a mainframe quality BBS. A mini Compuserve Full screen cursor-controlled interface, topic outline structure, public and privale topics, audit traits, smodern, integrated ins content retrieval and more MIS-COS, XENIX and HMY versions

1021 No Sepulveda Blvd., Suite K Manhattan Beach, CA 90266 213-545-1455

CONSTRUCTION CONSTRUCTION ACCOUNTING

The CMAS system is designed for contractors where tracking job costs is required. Modules include Job Cost, PR. A/R. A/P. GL. PO's, Inventory, Service, Dispatch, and Estimating CMAS software is fully integrated & ties into most spreadsheel & WP programs. Multi-Terminals DATA-RASKS

11000 Cedar Road - Suite 110 Cloud and Ohio A4106 (215) 721-3400

CONSTRUCTION MANAGEMENT Mordable, understandable software for build-ers. Job cost, billing time and materials or percent complete, payables, change order and retention tracking in one package. Prints checks, statements buts 30 + reports. Clear manual & help windows, backed by our professional phone support staff \$795 YARDI SYSTEMS, INC. 930 Laguna Street Santa Barbara, CA 93101 (805) 687-4245

DATA BASE

ROOTS II FOR GENEALOGY Organize your family tree and print carriers ready

family books containing charts, text and in-dees. Store, retrieve and display 1,000's of family facts with biographical sketches and source documentation, Lightning-last searches and sorts 250 page manual Substaction guaranteed Write for free brochure, \$196 (+ CA tax) COMMISCIET 2257 Old Mid

Mountain View, CA 94043 415-967-1900

I dBASE POWER WITH 1-2-3 Introducing DB12 III, a powerful disk-based ISAM-DRMS that operates inside of Lotus 1-2-

3. Using the Lotus Add-in technology, DB12 # ssly ningrates with 1-2-3 to provide menu commands and @ Functions that directly namoulate dBASE III DBF, NCX and MEM files from the 1-2-3 environment Price \$149 Call for TRIPLE C SOFTWARE 800 W. Gakland Park Blvd.

ort Lauderdale, FL 33311 (305) 564-8011

PCC/InfoManager HIERARCHICAL DBMS for IBM PC/XT/AT or comp. Power of a sophisticated one-to-many DBMS

without the hazele. Easily store. retrieve and group data for reports without programming or applications. Ideal for client lists, library books. any descriptive info. Requires \$12K. \$99.95 + \$5.00 S/H (het \$149)

Visa/MC/Choice/Chack/M.D. (800) 345-0834 (except VA) PCC/InfoManager, P.D. Box 3088 Oakton, VA 22124. (703) 648-1780 CIRCLE 900 ON READER SERVICE CARD



• 578 • 578 • SUPPLES • SERV • PRICES

DATA ENTRY

DATA ENTRY EMULATOR You will not find any PC Data Entry System-FASTER FASIER In use or LOADED with more USABLE leatures. Distribution Worldwide. The EMULATOR will meet your Data Entry needs-ORreturn it with no obligation PC or DE style key-board. Fully meny driven Price \$395, 30 DAY FREE TRIAL Also avail for IB-II S34/36 TOMPLTER

E1 E1

COMPUTER KEYES 21929 Makah Roa Woodway, WA 98020 (205) 775-6443

KEYENTRY III"

Whether just starting, or replacing keypunches 3741s, or dedicated systems. You won't see the full patential of PC-based data entry until you see KeyEntry III, the premier data entry system for PC's \$395 to \$895 version/quantity de dent. Complete Evaluation Package just \$42.50 delivered. To order, or for information, ca SOUTHERN COMPUTER SYSTEMS INC. 2732 Seventh Avenue South Birmingham, AL 35233 19001 533-6879 or (205) 251-2965

DATA ENTRY

Data Entry: PCPUNCH. A LOT

OF WALLOP BUT LIGHT ON YOUR WALLET With a wide variety of output

alion, PCPUNCH is the PC based data entry program that has all the features you need to the remarkably low price of \$295. A fully featured demo is available for rust \$35. Prolessional data entry has never been so affordable. For further information, or to order call or write:

CPUNCH 6917 Arlington Road, Suite 215

Bethesda, MA 20814 (301) 951-8441

BODE/PC DATA ENTRY SYSTEM Inn-rated PC data entry software. Fastest and assist to use Extensive features to meet eve data entry requirement. Stand alone and LAN versions. High-speed data entry keyboard available. Demo version includes all programs and documentation \$40 (\$5 shipping, CA add tax) creditable to full version for 30 days.

20823 Shevers Creek Blvd., C1-C Cuperting, CA 95014 (408) 973-9292 TELEX 701111

VDE-Viking Data Entry The premier data entry system Full-featured to replace key punch & keydisks. Full screen "FORMS," double-key verify, wide variety of options, crossloots, subtotals, batch balancing

duplicating, statistics, skipping, etc. Character field & record level validations \$120-600 Also VIKING SOFTWARE SERVICES, INC. 2815 East Skelv Drive, Suite 816 Tutsa, Oklahoma 74105 (918) 745-6550

> THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

DESK TOP PUBLISHING

> COULD YOU PRINT THIS PHOTO



WITH YOUR WORD PROCESSOR?

You can NOW with SLEd!

method of creating graphics and incorporating them into your documents using your



Automatic DeskTop Publishing

PowerText | Formatter Automatic text and page

layout for DeskTop Publishing. Typeset ads, books, contracts, scripts, newsletters, manuals, form letters, etc. with a LaserJet, your WP program, and PowerText. Set your strategy, then publish without constructing each page. Hyphenates, justifies, puts text in columns, numbers paragraphs, produces con-tents and index - all with simple commands. Include pictures with our separate owerText Graphics Module.

For PC/MS-DOS with 256K. Beaman Porter, Inc. 417 Halstead Ave Harrison, NY 10528 (914) 835-3156

(800) 431-0007 \$89.95 each \$5 shinning PROLE SIM ON READER SERVICE CARD THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET.

DESK TOP PUBLISHING

VENTURA PUBLISHER \$565 Free Shipping MAGAZINE EDITORS CHOICE

Xerox full screen monitor \$1,195 roller card & netall let shipping not included Cell for a full line of

ADVANCED DATA REPROGRAPHICS (617) 938-5770 SPICES SES ON READER SERVICE CARD

LASER SIGNATURES & LOGOS

Let us turn your signature, logo, or photo into a graphic tent for your word processor, and a graphic image for your desklop publishing system For output to HP+ Contata, Canon, or Ricoh laser printers (please specify). Send \$100 with each original 15 day delivery. Call or write



PO Box 6158 Little Rock, AR 72216

DEVELOPMENT TOOLS

BASIC PROGRAMMERS

Mach 2 Supercharges BASIC

Soft Sector Magazine Editor's Choice 2/87 Mach 2 boosts program speed many times and over your functions not normally available in QuickBASIC BASCOM & BASICA (also available for Turbo Basic & Turbo Pascal)

Use our subroutines for INSTANT screen displays and pop-up windows. Save programming time and have smaller laster programs. No more 64K string limit — use all available DOS and LIM Exded Memory for data. Scroll your display in all 4 directions. Store, search and sort strings at assembly language speeds. Read, write and COPY files fast as DOS. Controlled input routine uses standard editing keys & ignores *C &
Greek — returns SCAN code & SHIFT STATUS. Read file names into strong array from any directory on any drive. Get & set hie's date / time Search DOS path for a file. Get and set current directory and default disk. Read characters from display instantly. Large character set 5 lines x 4 columns. DOS and BIOS services that return true error codes - no more Albart. Rietry or itemate mgare strings by SOUND. Number nounding and PRINT USING up to 8 times faster than BASIC Much more Only \$69

Memory Resident BASIC (in as little as 7Kh

New Low Pricel Stay-Res lets your pop up your compiled BASIC programs. Select your hot key or pop them up with a PCKE Automatic screen save on pop-up proposed EMS (duty reported they DOS 3 a 3 and each program uses only 7K of DOS memory the rest is stored on haid or RAM disk or in Ex panded Memory Programs can be removed from memory Requires IBM or Microsoft compiler. If using 00 2 or 08 3,005 3 or later is needed. Only

\$89" (Add \$50 for EMS / disk module) Screen Machine

edit screens captured from other programs Automatically generate source code to display screens in BASIC Assembler dBASIL and furbi with no royalties. Full support for color block Automated Technical Systems operations, auto line / box drawing imacros and evlended character set. Out and paste blocks from one screen to another. Only \$791

Order Now 800-922-3383

We welcome WSA / MC (COD in US only - add \$3) Shooing US \$3 / order Canada \$5 Others - \$16 for 1 or 2 products — \$7 each additional in Georgia, please add sales tax and call 404-973-9272. Demo data available — Sand \$5 check. Refunded on dract ourchase.

MicroHelp, Inc 2220 Carlyle Drive . Marietta, GA 30062

CIRCLE SIG ON READER SERVICE CARD

DEVELOPMENT TOOLS

QBase Quick screens and more for BASIC

If you program in BASC. then Oldese is your shortest could to profession tides, data only screen, and even competes applications. Unlike critically stress basiness from the face power in the control of
on fifteen screens per database. OBase can do all this because it's re unsee can do all this because it's really observed programs. The screen builder so you create and edit screens, which are wed as form definitions that any program in readity access. A run-faire package asily modified] then does all the work of

ging the datab verything is included All of the source code for the s nited to show how they work, and where by be customized. Office also includes Tr or Tutor — a clear and practical discussion

electronic concepts and circuits, but written in a programmer's perspective. OBase is a lie for either Microsoft QuickBASIC or Borlar Turbo Basic (please specify when ordering). It costs only \$59.00 and comes with a money-back

CRESCENT SOFTWARE 64 Fort Point Street East Norwell, CT 06855 (205) 846-2500

Offices requires DOS 2.0 or higher, and at least 2 Vox. M/C. COO, checks accepted.

REWRITES STRUCTUREO BASIC Convert old basic code to structured for compilers. Solit multi-lines, remove unused line numbers, indent/nest loops and IF/THEN/ELSE/ ELSEIF/ENDF statements, variables upper case. keywords lower case, more. Use alone or to finish what others left out. Send \$50 check/money order Az add 61/9%

2127 N Langmore Street Chandler, Arusona 85224 (602) 899-8714

Smart System Services... THE Smart System project file and application development tool. An extensive library of standardized calls and utilities. User I/O, menu gen eration, database, lookup, report, and transaction

handing includes the PROJECT WRITER utility (you answer the questions, it generales the source code for your Smart project files). Call our order line today(1\$119 + \$3 s/h Check M/C or Visa (602) 926-7454 Amaion industries inc 725 W Commerce 3-C Gilbert Asovya 85234

" NETBIOS Routines "

Network Master is a library of 80 rootines which access NETBIOS functions. The routines are in voked by compiled programs to control the network. Routines support network names resources and sessions with Wait and No-Wart options. Create your own transaction process ing and program communication systems. Many complets are supported. No royaltes. Vita/MC \$199.00

Starlight Software 2861 Central St Evanston, IL 60201 **(312) 864-9370 **

> **NEW Turbo Forms V2.0** The best screen data entry and display packag just got better! New features. Windowing, con text sensitive help, full function key and graphic character set support, include files for menuing. link let utithes and more IBM PC & Compati

bles, Turbo V3 0 or later \$59.95 including S&H MC/VISA/COD Great Lakes Software Systems. Inc *** 2510 Capital Ave. SW, Suite 203. Battle Creek, MI 49015 ... 0516) 962-2017 ...

DEVELOPMENT TOOLS

FREE PRICE GUIDE

Call or write for our FREE comprehensive price guide containing hundreds of languages, utilities and books specifically for BM personal computers and compatibles We're the world's leading independent dealer of programmer's development tools because we provide sound advice low descount prices. Ital delivery. FREE domestic shipping and no hidden charges

Programmer's Connection 801-336-1166 USA Hartwise OH 446.52 216-877-3781 OH & AK (Colle 800-225-1168 Canada 9102446679 Teles 177-3781 International CONTENADED SERVICE CARD

Turbo Programmers 15 MINUTES = 200 HOURS with new turboMAGIC code generator.

Input forms and help windows up to 65 lines long. Scrolling within framed windows Pop-up menus Pull-down manu systems. And stuck more! "turboMAGIC is the Cadillac of prototyping tools for Turbo Pascal."

JIM POWER, COMPUTER LANGUAGE, JUNE 87 Test automatic updating of dependent fields adds flair to your input acreens, turboMAGIC will be a blessing for

rogrammers who would rather not write he user interface for every program." Nell Fuberning. PC MAGAZINE, 24 Feb. 87



BRIDGEWORKS! FOR 1-2-3 idge the gap between Lotus 1-2-3 and BASIC, iscal, dBASE, communications or other applications. READ data from and WRITE directly INTO NAMED RANGES in 1-2-3 or Symphony work sheet files. No PRN or DIF files. Not copy pro-

tected. Integrate into your applications with royalty For Lotus 1-2-3 and Symphony on IBM-PC/AT/COMP \$59.95 Also available resident version, C tools, BASIC subroutines.

GreyMatter International Inc. 100 No. Country Road / Bldg B Setauket, NY 11733

516-689-7682 BASIC PROGRAMMING LIBRARY More for your money! Over 100 ASM routines to

your compiled basic or QuickBasic programs. Sort, search, windows, menus, graphics, file handling, ZapPrint & morel Complete documentation & source code. No royalties. 30 day money back guarantee+++Free Ram Disk if you order from adl! \$79 Post paid LFS SOFTWARE DESIGN P.O. BOX 2395

Detroit, MI 48223 (313) 537-4445

StruBAS

NOT COPY PROTECTED 3 Office Park Drive Ste Roca Amarisas 841-225-7755 FREE 30 DAY TRIAL

TURBO PASCAL GENERATOR GTP APPLICATION DEVELOPMENT SYSTEM Builds complete, working applications. You give it spec's, it writes error-free code

* Indexed Data Bases * Multiple Screens * Report Generator * Menu Generator * Context-Sens Help * Global Searching Easy to Lise Price \$200.00 Visu/MC ck MO

PO. 60x 928 Katy TX 77692 (713) 391-8570

> THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

EDUCATION

GRADE WEEK VACATIONS Average and print out your grades with the fast, easy-to-use AEIUS GRADEBOOK program. New

version 2.3 is published as Shareware. In use by leachers coast to coast since 1985. Shareware disk with program and tutorial only \$10 and Register for program, printed manual, phone support and update notification for only \$35 ppd MSA or MC

PD 8ca 700457 San Jose, CA 95170 (408) 257-0658

(919) 758-5433

THE QUESTION BANK Professional-quality test and exercise genera-

for Any size or type of question. Wordwrap reform, imports your existing files directly into the question bank. Select questions six ways, randomize, preview, & edit. Outliner for systematic topic coverage. On-line help. Multi-user hard disk mgr, \$50 TEACHING TECHNOLOGIES PD Box 8333 Greenville, NC 27834

ENGINEERING

STRUCTURAL DESIGN Fast, highly interactive, integrate structural analysis and design of BEAMS, COL-UMNS, TRUSSES and FRAMES of any material Easily mastered programs result in dramatic time savings while producing efficient, accurate designs Specify PC, XT or AT and send \$25 for

n diskette la C-Squared B-Squared Software Design, Inc. 763 27th Avenue Dept A-2 San Francisco, Ca 94121 415/751-1332

SIMILI ATION GPSS/PC is a full-power version of GPSS, the most popular mainframe simulation language Specifically designed for interactive use on to day's high-speed microprocessors, it is loader

with leatures such as interactive graphics and animation. Using GPSS/PC, you can product the behavior of complicated real world systems. MINUTEMAN SOFTWARE DO Doy 171/8 Stow. MA 01771

800-223-1430/617-897-5662 Ext. 316

ENG/SCI GRAPHICS OMNIPLOT(S) (screen graphics) & OMNIPLOT (P) (plotter driver) provide integrated engineer ing/scientific 2-D & 3-D graphics with NO PRO GRAMMING REQUIRED! Menu-driven, flexible professional Choice of formats: tabular/line

contour, bar, pie, 3-D wire frame & much more OMNIPLOT(S) \$195. OMNIPLOT(P), both \$295 MICROCOMPATIBLES 301 Prelude Drive Silver Spring, MD 20901 (301) 593-0683

GAMES

ENTERTAINMENT/

PC/VEGAS II Poker, Blackjack, Roulette, Keno, Slots-\$26 Above plus Baccarat and Craps-\$39 Exact Vegas simulation, includes Help, best bel/odds windows. Cross-game scoring. Graphics not mandatory Color or Mono MS/PC DOS, 128K. C Source available, ask. Add \$2 for shipping/CA

res, add 61/46 tax. D. A. H. REAR SOFTWARE PO. Box 10793 Marina Del Rey, CA 90295 (213) 374-0358

USE YOUR PC TO PLAY LOTTO! increase your chances at winning big! LOTTO-LUCK is a computer program, designed by a computer scientist using the latest techniques of Geometrical, Kabalism and Random Relationships of numbers to give you an opportunity consumps or reunders to gave you an opportunity to predict possible wirning pRCx(6 loter nam-bers. LOTTO-LUCX will work on any lottery, in any state or country Runs on IBM PC, C-64 and Apple III Sent S29 95 + \$3 S/Hto. WIRSWARE SYSTEMS

P.O Box 8130 Sacramento, CA 9581B (916) 457-5535

ENTERTAINMENT/ GAMES

Twelve Metre Challenge



one or two computers develops cora tive, political, financial, investigative and technical skills

Not copy protected for IBM PC XT AT and compatibles DDS 21+/384K/ CGA/2FLor1 FL+HD \$50 each \$90 for two. (Two copies necessary for communications mode) Add SS S/H MA residents add 5% sales tax VISAIMO

GREYLOCK SOFTWARE Inc. Box 730 * Great Barrington MA01200 413-528-5555 RCLE 732 ON READER SERVICE CAND

BRADLEY 4+ JOYSTICK, GAMEPORT Made Easy for \$99.95

With F15 Strike Engle \$121.95

BIG DISCOUNT PRICES CALL BRADLEY COMPUTER 1-(800) 634-0274 In Mich. (313) 774-9995 21013 St. Germale S.C.S., MJ 48081

Add \$5.00 S/H - Visa/MC/Check/M/O CIRCLE 751 OH READER BERIVICE CARD

MUSICAL IMAGE GENERATOR"

The Super Music "system draws a wide variety of fast-action color graphic designs to the beat of any music in real-time. IBM PC version uses cassette port. IBM/PC/XT/AT/80385 version includes A/D converter card for use in any iting or short slot. Detailed manual explains simple hook-up to any audio equipment PC ver 1.1 \$39.95 PCXTAT or compatible ver 2.1 \$39.95. 100% machine language No DOS required Write or call for more 11fo Check/MO/VISA/MC INVENTEK INC. PD Box 366 Lincoln, NH 03251

603-745-3756 9 am-5pm M-F (EST)

PC MAGAZINE - SEPTEMBER 15, 1987

ENTERTAINMENT/GAMES

Natural Intelligence.

verybody is excited these days about Artificial E Intelligence. But tools come and go, creators stay. It takes more than AI to solve YOUR problems.

It takes outural intelligence - YOURS! If you agree, you are ready to sharpen your problem-solving skills, expand your memory, improve your coordination, quicken your reaction to various stimuli, enhance your perception, and maybe even stimulate your creativity - while having fun-

You are ready for MENTOR"



MENTOR"

For mind expansion and fuo - just \$49.95.

(in Texas, cell collect 915-494-5936) Vou/NaverCest accepted IBM PC and competities, 254K, graphus board. Research Research, Inc. + 3015 A West Cutther + Minland, Texas 79700

FINANCIAL

CheckStar - I FREE DEMO DISKETTE

Program for home/business · Handles categories

· Monthly/yearly reminders · Money back guarantee

49.95 Free shipping & hand Visia/MC/Checks RightSoft, Inc. 35. HOUSTON, TX 7725 (713) 464-3713

HISTORICAL MARKET DATA

Perform Technical Analysis on Stocks** IBM PC ASCII formal Latest 250 days of Price & Volume data on all DJIA stocks, the DJIA and the OEX for \$19. Updatable Same data for all stocks in S&P 100, + Gold & Silver for \$44, Lotus models included Add \$2 S/H NV res. add 8 25% sales tax.

Equity Capital Group One World Trade Center, Suite 8817 New York NV 10045

(718) 256-7505 RRworks \$89

Are you using a spreadsheet for IRR'S? Full screen menu and pop-up windows make IRR & PV simple Fast computation, up to 360 uneven periods. Easy input automatic steps, % growth, replication; internal hand calculator; accepts dates & fractional periods, too! Reads spreadsheet PRN Files! Name, save cases, easy case management, 256K color/mono, 30 day \$ back guar, \$89+\$5 s/h+NY tax, chk/Visa/MC KEEP IT SIMPLE SOFTWARE, INC. 580 Fifth Avenue

New York, NY 10036 (800) 543-KISS (212) 764-KISS

PC Magazine Classified Marketplace the ultimate target market!

The brand specifiers who read PC

Magazine dent have the time to shop stream, their only concern in getting what they need as quockly as possible. They'll DIRECT their attention

to PC Magazine Classified Marketplace

For them PC Magazine Classified Market place's Direct Response Display Ad Iornal represents a last, man and cost effective method of product acquisition. They know if will have the products they need a aformation they want organizing price, classe discounts, specifications and If you think that your business can bene

So take DIRECT action and call (212) 583-5115

MENTOR" is new software for a rigorous mental workout, MENTOR* contains 58 psychometric exercises and tests (including 25 complete 1.0. tests - over 950 problems - with separate sections on verbal and numeric abilities).

Tainte you can if MENTOR" please call 800-443-7380

SPORTS HANDICAPPING SOFT SSWIN with thoroughbred/harness & grevhound handicapping software-\$29.95, enhanced-\$49.95 Up to 13 entries analyzed class. speed, limes, track lengths, post, stretch, & fin-ish positions. Pro Football System \$39.65. Pro Basketball System-\$49.95 Add \$2 post/hand. MC/VISA accepted Free information SOFTWARE EXCHANGE PO Box 5382-PC

W Bioomfeld, MI 48033 (313) 626-7208 Orders 1-800-527-9467

PRO FOOTBALL ANALYST Handicap NFL games against the point spread

easily and profitably with your computer Only 5 min/wk & your local newspaper is needed to uncover hidden overlays in the betting line. Wining season GUARANTEED or your MONEY BACK \$34.95 IBM & compals, other vers. Sorry GE FIDGE SERVICES, INC 170 Broadway Suite 201-PCM New York N Y 10038 Info 718, 317, 1961

UPDATE NFL CHALLENGE DATA "ROPOSTR" makes it easy to update the Team Diskon your NFL Challenge game using your own data base of current player information in-

cludes team rosters revised to end of 1986. Prints formatted printout player names and data. Requines your IBM type NFL CHALLENGE (copy right XOR Corp) Price \$32.00 ppd. VISA/MC/ H.D & S Software

PO 8cx 924183 Houston, TX 77292 (713) 688-9102

MASTER CASING GAMES Learn casmo skills w/o risk! Craps, Blackjack, Roulette, Poker, Baccarat games leature vivid color displays, odds info, complete manuals

EACHGAME -\$29 * ANY TWO - \$49 * ALL FIVE \$69 For IBM PC/comp w/color graphics. Check/ MC/Visa ppd HITECH MANAGEMENT CORP PO Box 2121

Roca Raton, Fl 33427 Collect calls accented 1-800-332-2049 x 3017 (305) 392-3678 (FI)

SPIDER CHALLENGE! Soider is unique, entertaining & addictive. You

can only win with good strategy and skillful play Are you up to the challenge? Great graphics, online bein & manual Also included--Klondike & Cantield CGA 178K color or mono monit Spider demo-\$5 00 All 3 programs - \$29.95 Visa MIC Check SOFT_CARDS PO Box 25588

Portland, Oregon 97225 (503) 292-3922 LOTTO NUMBER ANALYZER Use your PC to help you win the Letto. This fun to use program for most home computers will quickly fell you which numbers are 'due' any

patterns and trends, what groups to play and morel Make your selections based on the laws of probability and INCREASE your chances of wingingt (Int): \$24.95 ± \$1.50 c/b SOFT-BYTE COMPUTER PROGRAMS PO Box 556 Dayton, Otio 45416 (513) 233-2200

FOOTBALL WAGER \$\$\$ WARE Uncle VITO and Rotten Robber have developed a program that will show you the trueline on all football names. Undate in 5 min (week and store to disk. Complete with wager summary, sched-

ule, last 3 years database. Gives 2 opinions on the games, sorts out the best games and more You get user suggest and winners! IBM & Comp. NEL Trueline or college \$39.95. For our neighbors to the North Canadian football \$49.95 J&R Software 523 2nd Street Towanda Pa 18848

**** AOULT SOFTWARE **** Watch these girls! Let your PC/XT/AT, Compatibles & you have some real entertainment Games, graphics and more for adults only

Volumes 1 and 2 are \$11.95 ppd. Volume 3 \$16.95 and Confidentially assured Color or graphics can't needed. Must state and sign age 33 Over 21 PO Box 106 Marion, CT 06444

FINANCIAL

MONEYCOUNTS' is Only \$16!

Favortourse CPA designed in nagement accounting system for home and business. Checking, credit balancer, budgeting, financial state meets, graphics, financial data base with three-way look up, inquiry much more Not copy protected

lew version 4.0 stomatic entries and more!

1-800-223-6925

Forme Talmonto

TAX PLANNING SOFTWARE

plates to calculate an plan 1987 tax liabilities Explanations of tax reforms included plus the new W4 forms Easy to use Easily customized Qualifies for discount on future tax preparation programs \$50.00 Quick Delivery APPLE-WORKS, Mac/EXCEL versions too VISA/MC. ISLANO COMPLTER SERVICES 3501 E. Yacht Drive Long Beach, N.C. 28461

E 754 ON READER SERVICE CARD

(919) 278-9483 - (800) 826-71461 Orders!

TO PLACE YOUR AD IN PC Magazine Classified Marketplace Call (212) 503-5115

PC MAGAZINE . SEPTEMBER 15, 19×7

FINANCIAL

Balance Checkbook Organize For Tax Time Easy Far Hame Pawerful Far Business ONLY \$7495

Checks

NOW-Version 4.1

Not Copy Protected

WSA/MC/Check CALL NOW! 213/661-2031 9 30 AM-5 PM/M/F

CDE SOFTWARE 948 Tularosa Orive Dept. PC Los Angeles, CA 90026 Balances Single entry occounting

system centered around the checkbook Hondles cosh & charge transactions · View, edit or print any entry for a year

with simple but powerful commands · Balance sheet, cash flow and profit & lass statements, plus many more report Prints checks; versatile address file CIRCLETIS ON READER SERVICE CARD

FINANCIAL

GENERAL

APTOOL! \$49

Stocks/Bonds/Funds/Opr. A
 True security & portfolio RC
 Multiple portfolio batch ops
 Over 10 reports plus graphi
 Dow Jones/Compuserie up
 FIFO, avg. & spec. tax lots

Risk Adjusted Stock Evaluation Swap YTC/YTM/Evaluations and Swap YTC/YTM/E Auto-dustrinerno merge/labele "Who owns" & key word screen 45-day 5-back quarantee C/V/MC

CALL 800-826-8082 TECHSERVE, inc. (204) 747-55% POB 79056, Bellevan, N.A. 98007 CIRCLE 757 ON READER SERVICE CAN

Competitive Market Prices

Fast Free Shipping Call us last for . BEST PRICE . 1-800-445-1614

HUGE

SAVINGS!

TRANSICRO GRAPHICS

GENERAL

US\$8.-per disks ??? World's largest software library for Apple II, lie IIC and IBM/PC. Thousands of powerful pro grams specially for Business, Education, Enter-tainment, Science... You can find all of them from our Library For your complete Air-mailed cala-logue send US\$1 00 to

to 999 Generales shopping lists. Creates hard

cook cookbook, 65,000 recipes per database

PO Any 33610

THE RECIPE MANAGER

on IBM PCs and compatibles 128K up with PC/DOS or MS/DOS. Serving size adjustme

possible, disk space permitting. 115 recipes included. Indexed manual with futorial. \$49.95 + \$3.s.th. Chk/AX/MC/VSA/MA resid. 5% tax) SEM ISLAND SOFTWARE PO Box 393

sing, MA 01867-0693 (617) 944-1382

** MASTER DIRECTORY ** Cooles the directories from your diskettes and creates a master file. Program then softs and prints report by disk and then by program. Great for keeping track of your programs. Requires DOS

2.0 and 2 drives. Write for more info and list of programs. To order send \$10.95 + \$2 s/h. THE SOFTWARE HUT P.O. Box 613

Bantam, CT 06750 (203) 567-4992

PC HYPERCALCULATOR

Pop-up emulation of both HP-11C scientific and HP-12C financial calculators integrates with ev-

ery program you use. Features two-way data transfer, program and data storage on disk, on-tine HELP, hex/cct/bin anthmetic, built-in equation solving and integration, alphanumeric prompts, 100 registers, 1000 program steps includes free 8087 version and applications programs \$49:90 + 40 o//-d imoeriland software associates ms \$49.95 + \$3 S/H Post Office Box 7000-64 riondo Brach, CA 90277 toll free (800) 628-2628, ext. 502

Flow Charting II+ The New Plus

Flowcharting FLOW CHARTING is new! It's now Flow Charting II+, with more speed + more

for Fast

functions + more printing options:

 t0 text fonts; 26 shapes;
 Line mode can stop at a shape;
 Backspace key can erase a line to its origin;
 Free text entry anywhere, or select to-centering; stical or horizontal printing; one art or multiple charts. Used by Fairchild, Bechtel and

more than 500 other major corporations. Edit quickly and accurately - even major edits -with Flow Charting II+, the Specialist. See upur retail store or call

PATTON & PATTON

800/672-3470, ext. 897 California 800/538-8157, ext. 897 National 408/629-5044 International CIRCLE 750 ON READER SERVICE CAR

FORTRAN/PASCAL GRAPHICS GRAFMATIC (screen): 75 Microsoft FORTRAN, PASCAL, RM, Lahey 2.1 callable subroutines. Includes 100 page user manual. Grapi lives, total 2-D plot support, 3-D plots & solid port. \$135. HP, H-I plotter? Try PLOTMATIC los

complete piotter graphics capabilities. Works w, GRAFMATIC, \$135 Both \$240 Ask about our 15 MICROCOMPATIBLES INC 301 Protude Drive Silver Spring, MO 20901 (301) 563-0683

· Estimate '87 & '88 tax liabilities.

- · Play "what if" questions. Keep track of your finances.
- . Don't pay more than you have to.
- · Make the new laws work for you. Personal Version

(516)931-2516 s Software Corporation

MS-DOS Software for ISM PC and compatibles. * NY res. add 8% sales tax.

+54. shipping & handling mc/viss/cod

Apt Software Co Hicksville, New York 11801

PERSONAL FINANCIAL PLANNER **LOAN AMORTIZATION** Tax Reform Forecasting, Electronic Checking and AmPack is a straightforward loan am

Savings, View Graphs, Pop-up Merus, On-Line Help, Mortgage Qualifying, Refinance, Analyze Expenses, Resale Analysis, Amortize Offerent software package designed by a CPA & tax at-torney. AmPack supports variable rates, graduated, skipped, & principal-only payments. Also Mortganes, Financial Consultant Module, for IBM includes ballons, negative amortizations, cus PC \$49.95, Money Back Guarantee tomized schedules, loan analysis & more \$49.50 MicroAdvantage Software Inc. Visa/MC Add \$5s8h #43-A Salem Sottfar, In m, MA 01801 8753 Park View

THE MONEY ANALYZER Handles all money calculations. Fast & accuratel Mortgages, amortization schedules, comparative analyses, annuities, bonds, present &

(617) 938-6565

future values & more! Create custom print outs. Full documentation. Amust for anyone working w/money 30 day money back guar+++Free Ram Disk if you order from ad \$69 PPD LFS SOFTWARE DESIGN P.O. Box 23595 (313) 537-4445

INTRODUCING InvestNow!
Memory resident PC investment tool that provides the computation of Buying Puts, Buying Calls, Writing Covered Calls and Writing Nat Calls, Writing Puls & Stock Yield \$79+\$3 S/H Chk/MO/Amex (GA residents add sales tax). FREE Demo is available EMERGING MARKET TECHNOLOGIES P. O. Box 420507 Attenta, Georgia 30342 (404) 237-9473

ukre. W153220

(414) 778-7200

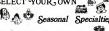


GRAPHICS

GRAPHICS FOR EVERYONE! For use with The Print Shop

and many other graphic programs !

Available Products Include: SELECT YOUR, OWN



Mini Collections 1 & 11 Graphic disks from \$11.95 to \$29.95

39.95. Available for IFX, MX, EX QI and compatibles. Gemin: 10X

Tondy DMP 130, OMP 430 and

AUTO CAD VERSIONS 2.5 and later

Color Driver is also available prices show in US funds.

HIGH RESOLUTION AND INCREASED MAXIMUM SIZE

Advanced Micro Solutions

260 Edelide Street East, Box 153

language IBM/Epson matrix, LaserJet+, MS

use/cursor knys VISA/MC

Michael Allen Consulting

St. Charles, Illinois 60174

19 South 5th Street

\$89.95. Available for IFX EX. LQ1 and compatibles, DMP 130

DMP 430 and others.

PC-Draft II \$501

1990 SOFTWARE Call or write for free information (814) 695-1928 P.O. Box 1862 Altoona, PA 18603 MC/VISA accepted CIRCLE 760 ON READER SERVICE CAR

PAINTBRUSH UTILITIES AUTO CAD USERS NEAR PLOTTER QUALITY FROM YOUR DOT MATRIX PRINTER Display/Save EGA Images FAST with our aub second Displayer Stand-alone, resident, or MS C

. EGA 'Screen Grabber', only SK Edit/Greata PC Paintbrush Fonta with our Dual Font Editor.

 Make large cutouts, locate XY coord's, easy slide shows. · All for \$49.95, +\$2 S/H (See the speed. Demo Disk: \$5)

3-0-0-6305 Mobud Dr., Houston, TX 77074 (713) 771-4914 Outside TX: (800) 227-0918

CIRCLE 761 ON READER SERVICE CARD

YOU OON'T WEED A PLOTTER .. To get beautiful charts from MAGNA CHARTER. View the finished graduct on screen. Pie, Area. Line, vert & horiz Bar, Stacked Bar, Multibar 92

pp User Manual in 3-ring binder. Requires 128K color graphics adaptor, RGB or graphics CRI. Price \$79 plus \$4 S&H. Not copy-protected Brochure available MACOMB COMPUTER SYSTEMS 30612 Jefferson Averue St. Clair Shores, MI 48082 (313) 445-6982

(312) 377-7320 TO PLACE YOUR AD IN PC Magazine Classified Marketplace Call (212) 503-5115

GRAPHICS

Smart GRAPHICS rtGraphics I: 2D Graphics. Fastest 2D drawing, rotation, scaling. Draw lines, arcs, sectors, polygons, circles, pixels. Faste polygon filling. Screen paging. Custom color palettes. 8087 support. Manual included. \$35 rtGraphics II: 3D Gran Very fast 3D wireframe drawing Parallel, perspective projection Rotation around any abitrary axis. 3D scaling, translation.

3D to 2D conversion utility Required SmanGraphics I. Support CGA/EGA/Hercules adapt Available as subnoutness callable from IBM / MS Fortran, Profest, Pascal, C. Quick Basic, ASM, Turbo Pascal.

MC-VISA-Check Money Order only Picare add \$3 S-H Outside USA add \$5 HYDREX Graphics Corporation P.O. Box 821144 (713) 953-1702 Houston, TX 77282 CINCLE 763 ON READER BERVICE CARD

(714) 893-2471

35mm SLIDE FROM YOUR PC COMPLITER SLIDE EXPRESS converts of

Toronto, Ont. Conado MSA1NO (416) 920-0879 CIRCLE 762 ON READER SERVICE CAR files produced on the IBM PC into brilliant 35mm color slides with color resolution 400% better than your monitor. Leave your printouts behind. Use high resolution color slides up to 4000 line. The fastest easiest, graphic drawing package COMPUTER SLIDE EXPRESS \$9/side Font editor Business bar and pie charts. Object VISUAL HORIZONS save, rotate, enlarge, shrink, Zoom, Keybd ma-cros. Screen capture. Popus merius. Pettern 180 Metro Park Rochester, NY 14623 editor Undo key Spray Paint. Arc Skdeshow PCK (715) 424-5300

> PC-KEY-DRAW VER. 3.27 \$15 Complete, fast, easy graphics program with 20+ fonts, 640+ patterns, virtual page, layers, macros, rotate to any angle, arom, and more! Shareware trial \$15 for program, disk manual, 1 fiyoung first, quick not exert harpister \$10° for abover plus 3 extra library disk, manual, binder, support. DEDWARE

Columbia, MD 21045-0595 301-997-9333

PO. Box 595

GRAPHIC PRINTER SUPPORT

At last IBM-PC graphics support for your dot metrix printer. Use the PrtSc key to produce quality B&W or color scaled dot matrix repr ductions of your display on your Epson, IBM Dixidata, HP, IDS, Centronics, DEC, Anadex, Deasouth, Germini, TI 850, Toshiba, NEC 8023, or C. Roh printers. If your printer is not listed, let us know and we will support it. GRAFPLUS supports all versions of PC or MS-DOS and will op-erate with IBM (incl. EGA), Techmar, and Hercules graphics boards. \$49 95. JEWELL TECHNOLOGIES, INC.

4740 44th Ave SW Suite 203 eatte, Washington 96116 (206) 937-1061, 1-800-628-2828 ext. 527

HEALTH

ATTENTION DIETERSII Powerful, innovative new PC software package Schedule weight loss in calendar, list or graph form. Project future weight on diets based on your personal data. Compare diets, effects of exercrise. Design your own diet to reach your or GOAL by specific date - much more. Send \$29.95 for disk and users guide. TR Software

Columbia, S.C. 29204 803-782-6851 **OIETWISE/ENERGYWISE** For Diet, Nutrition, Friness con

3830 Forest Drive Suite 206

· DET Evaluation (children and adults) MENU Analysis . RECIPE Analysis . BODY COMPOSITION . ENERGY EXPENDITURE MS/DOS \$39-\$120 (professional vers. avail.) MUTRITIONAL DATA RESCHIRCES P.O Box 540

INVENTORY

*** dFELLER INVENTORY*** A business inventory program written in mod-Seble dBASE source code. The menu-driven program lets you locate items by inventory name or number. It keeps track of reorder points, vendors, averege cost & other information *dFELLER Inventory \$150/Requires dBASE II/III *dFELLER Plus \$200/with History & PO's. Re-

quires dBASE # - III PLUS (for stock rooms) FELLER ASSOCIATES 550 CR PPA, ROUTE 3 Istoerning, MI 49849 (906) 485-6024 ***

714-993-0111

MANUFACTURING INVENTORY \$99 Inventory control with Bill-of-Material Proce ing and vendor file for small to medium size ballo manufactures or job shops. Project material re cost per work order and for all WIP. Allows up to 3 remote terminals to receive or issue material Ments supplier log requirements of MIL+45206. REAL TIME AUTOMATED, INC. 13/0 8 No Dynamics St Anaheim, Ca 92806

INVENTORY

INVENTORY MANAGEMENT

Sicch-Master 4 D. commercial grade system provises Stack Status, Purchase Older Weiting 3 Tactions, Tiesd Angeles, Quality Control Reporting, Detail Angeles, Ballin V. Control Reporting, Detail Angeles, Bill of Materials, Multilications and more Modales, "merco" proof & configuration bytes reeds. Code Source available. APPLED MICHO SUSPENSES SYSTEMS 1717–F Remardie Ave. Theword Beach, CA 92653

SUPER RETAILER" IS HEREI

(714) 759-0582

Find out why over 500 purchases a second are made on the finest point of sale program. Ultrateublity-cash, wheres, credit, deps. ... Control your business. Keep tracked your money Inventory module—599. Become a Super Dealer Modules for accting integrate automatically. 60 Day Monny Back Guzrantee. VESL/MIC.

100 East 2nd Street Mineola, N.Y. 11501 800-DIAL-PMC in N.Y. 516-294-1400

LEGAL

L-PLOT ...

A Metes & Bounds program to plot/print plats of any scale- Any description- use Any measurement Calc sease, error of chaure, plots mail bursch. IBM/compat with monographics, CGA or TGA capability, 51% Or send 51% or real working demo, refundable with order Visa,MC/chk, Trice into.

LAN/SCAN, Inc. P.D. Box 6863 Abliene, TX 79608 (214) 824-6419

TABS III TIME ACCOUNTING & BILLING

tet ARA Appraved Legal Billing System. Muttiple billing termats, aged AR, management reports. Integrates with STTs Gen Ledger, Acts Payable. Bust Accounting and Docket Control systems. Used by over 2,500 sims. CPAM, PDD0S. MSDDS and Revelt in IBM PC Retriever, wersions available.

SOFT WARE TECHNOLOGY, INC. 520 No. 48th Suite 176 Lincoln, NE 58504 (602) 466-1957 (500) 226-2856 Eri 533 (into only) CRICLE 786 ON READERS SERVICE CLAND

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

MAILING PROGRAMS

Forget your typewriter Use 911 Print labels, envelopes, etc.

Easy word processor
Automatic, multiple sorts
Up to 50,000 addresses
Color & poo-up windows

Excellent documentation Much, much morel \$16 check/visa/mc Mr. GoodSoft 813 Engleman PL, Loveland, CO 80538 (303) 663-3335 Gricus no Reconstruct care

THE MAIL ORDER ACCOUNTANT
Order fulfillment/List management. Includes
customer lists, labels in 6 formats, mentiory, invoicing, accounts receivable, customer payments by cash/predit card. Prints shipping labels,
credit card ships, UPS shipping manifests, sales
that amount differe III Pris source notes incredited.

Cook Carbon Sp. 20 - Supply (Manusch, Salet Law report. Glase III Plus source code provided \$750, demo \$25 + \$3.50 S/H.
GOLDSMITH & ASSOCIATES
46 Shattack Square, Suite 86
Berkeley, CA 94704
(415) 540-8396

BEST YET MAILER - ONLY \$30
This great maler lets you create fuse multiple files; print labels 1-2-3 across; optionally sort on up to 4 fields; copy between files; print and name, company, city, state, ap or your own order. Export & import ASOI/OIF file includes memo and 6 user coded felids. Visia/MC.

NORTHERN LIGHTS SOFTWARE 6311 DeBarr Road Ste 193 Anchorage, Alaska 99504-1799 907-753-4446

LABEL MASTER, 3.1 S49.00
Chosen 1987 Editors Choice by PC Magazen,
which says: "Label Master provides at the feahures needed to produce well managed marking
lists and labels." You caystomers with: "a dynamite product" a cinch to use." "incredible Universal search/point. Unlemited records. Finds duplicates. Auto dater. Chis state/op accuracy get the best.

GBT INF DBS.

RKS Associates
1350 Beverly Road, Suite 115-332
McLean, VA. 22101
703-536-7814 "VISA/IMC accepted"

POSTWARE MAILING SYSTEM
Automate mail preparation: Out postage costs
by 9/14 per piece or more. Only PostWare prints
address labels in bundle and bag, bulk mailing

order. Not a useless zip code sort. Prints address labels, beg tags /ray labels. Caic pootage. Works with dBase III PLUS, DATABASE, PowerBase, Smart 8 others. Nos ASCII. * 1st 8. 3rd Class.—\$195 * 2nd Class.—\$395 * Carrier Route.—\$300 * PostWare. Jr.—\$69 PostalColt, Iv.

 MAIL-TRACK-II \$195 Flexible, powerful, customizable, 1 to 24 user-

(316) 231-5023

delined fields, up to 20 user-delined reports, check for duplicative, auto only and state for man and common states, allow US. Carandam and torigin addresses, emport & export ASOIT files, select & sort by all fields, mail renge, Bulk Sort select & sort by all fields, mail renge, Bulk Sort select & sort by SOSTHAME. 1305 Sorth Rouse-Deat PCMB Philistorus (ANSAS 66782)

FLOWMAIL PLUS V3.0 → \$100
For everyone Doss everything include pleim, mge/
ge, stats, Nth samp, balk mail sort, sort on any
field, auth and camer note #, print sack last,
print labs 1/3/4 across, reg/env/cards mail mge,
select, and import/eapport. Standards feldes +
plone, data fine, 2 dates, money, and CR W, Um

fimited records Easy to use. Call Today FLOWSOFT custom programming 875 Frankth Rd. #1635 Maneta, Ga. 30067 404–428–4028

MANUFACTURING

INMASS II" MRP SYSTEM
More than 2000 companies have installed IN

More than 2000 companies have restalled M-MASS's software. It has achieved this acceptance by field proving itself to be effective and reliable in controlling costs, cating inventories, and increasing productivity. Can be interfaced with ber code readers, abit collection devices, other systems 8 activers. MC SQF-TWAPE PD Box 1327 Darts, CA 95167 166-756-4914

MEDICAL

CLAIM TRONIC. TM

what Lotus is to spreadsheets. Medical and Commercial claims filed electronically, also prints paper claims and receipts from an estem re-patient data base. Selftrought within 3 hours, includes a free form electronic note pad and other additional features. Complete a claim in one minus FREE CLAIMS FIRST 60 DAYSI \$1784.

SOFISTICATED SOFTWARE, INC. 3187 East Bay Drive / Suite "H" Largo, PL 33541 Tel. 1-800-346-3495 CRICLE 767 ON READER SERVICE CARD MEDICAL

MEDICAL SYSTEMS WITH ECS At PPM products have electronic claims submission (ECS) to Medicare & commercial carners, paper claims too.

PC ★ CLAIM \$89.95; claims only
 PC ★ CLAIM w/ICD's, CPT's & HCPC codes
\$229.95
 PC ★ CLAIM PLUS claims only w/patent file
Complete a claim in one minute \$459.

THRESHOLD & TM \$1,995 00 claims, A/R patient billing
 THRESHOLD \$3,995,00 claims A/R patient billing, complete practice management, state-

CLAIM & NET Nationalde claims cleaning house Full 100% read on product upgrade. PC & CLAIM & PC & CLAIM PLUS both house 30 day money-basic guszanites. IBM PC/XT/ AT (compatible MS-ODS 250% PHYSICIANS PRACTICE MINIMEDIATE 1801 South pulment stute 0 Indianapolis, IN 49241 (317) 248-0557

Lin continental U.S. call (800) 428-3515 Indiana residents call (800) 792-3525

COMPUMEDIC**
PROVEN Practice Most: System—in use 5 yrs.

Patrint data managament, A/R, G/L, statements, issuarce lavins, pricince analysis, wordprocessing, result, delinquent tracing, instancal data. FLD/BIC! user designed transitioncal data. FLD/BIC! user designed transitionsystems (potentiary (EyeMatr) 'à Veri (Ver-Loury') also avail. Deseir insquires riveled. DAIA STRATEGES, NO. 232 S. Jampe S. Suite 210 Escondiso, CA 92025 (619) 499-9201

DRs/ASSISTANT HAS IT ALL! Profit with the most complete software for PCs.

Prior with the most complete derivate for PLS.

Mr. jest billing A, AR but his but forms, Superbils, insur/inferral tracking, PRDBLEM ORI-BETED RECORDS, productivity, Sobrelating, recall, MORE Up to 5 db; Cleaned by an MC, prown over 6 yrs, Only \$893, 30 day trad. CAN YOU AFFORD NOT TO TRY OF MC/MSA. MEDSOFT OF CALIFORNA, MC. 15588 Samantha Avenue San Diego, California 92129 Tool thre (2000 Jest 40-0000

MUSIC

MUSIC S/W CATALOGI (60PGS)

Leam how you can compace, exit, play and print music using your IBM or other PC, Complete, detailed into, on the leading music software products incl. waveform editors, transcribers, educational software, sequences, MiCl inter-

Taces & more: Get the facts before you buy Competitive prices! Sand \$3. SCHERZANDO MUSIC Dept PCM, P.D. Box 3436 Mildrd, Ct. 06460 (200) 783-8756

PC MAGAZINE . SEPTEMBER 15, 1987



MUSIC

PC+MIDI

simple equation. To plug your PC or ern world of music-making, use the modern world of music making, use the complete line ware and hardware from VOYETRA TECHNOLOGIES. te line of MIDI was

☐ SEQUENCER PLUS: 85-track total MID! recorder/editor CONVERSION PLUS: file convenier for music notation programs.
 PATCH MASTER: network organizer and sound librarian. ☐ OP-6001: PC/MIDI interface card



Dept. C. 426 Mt. Pleasant Av maroneck NY 10543, or call (914) 698-337 CIRCLE 788 ON READER SERVICE CARD

FORTE! PC MIDI SEQUENCER

position pointer, DOS shell, more \$250

ONE-OF-A-KIND

MARRIAGE COUNSELOR

wings assessment, with a part

If Your Marriage Is Good, This Can Make It Better.

If Bad, It May Save It.

A Self-Help Expert System From

HUMAN PERSPECTIVES, INC. 230 NORTH PINE STREET GARDNER, KANSAS 66030 (913) 684-7100

\$49.95 + \$3.00 S/H

VISAMCKHECKM O

CIRCLE 779 ON READER SERVICE CARD

Transfer data between micro/mini/main/rame

applications. Eliminate duplicate date entry.

BOSTON ACCESS reads data from the screens

of one application and release it into a second

application Uses a powerful scripting language

APPLICATION INTERFACE

Charleson MAA (11770)

(617) 653-5105

ത്

LTA Productions

PD Box 6623 Hamden, CT 06517

203-787-9857

16 tracks Record/Playback with merge, 16

chunnels.track 60.000 notes. Most powerful

Mid-data editing available. Step Sequencer with

arrazing rhythmic flexibility. Lightning autolo-

cation. Automated punch, quantization, loop-

ing. filters, Iransposition, conductor, song

THE ELECTRONIC HYMNAL

own through the ages, parents have pressed their beliefs and passed on facts to their children through song, as this spirit that we offer this fact-

70 Computer Generated Songs of Joy & Prein Listen, Sing Along, or Play the Tune Garner 25 Children's Songs 25 Christm 20 Most of the Old Time Pavonte

PETROS SOFTWARE 230 NORTH PINE STREET GARDNER, KANSAS 66030 0131 884-7100

\$34.95 + \$2.00 S/H CIRCLE 700 ON READER SERVICE CARD

SONGWRIGHT III

MUSICPROCESSOR prints professional sheet music with lyrics. Full-screen graphics editor Transposes to any key, plays tunes. Features. multiple staff & voices, harmony, counterpoint bass/freble all time signatures. IBM/ Epson, Star Printers. Send \$49.95 + \$2 s/h or write for free

SONGWRIGHT Route 1, Box 83 Lovethesville, VA 22080-9608 703-822-9068

Tope 'N Step For IBM & compatibles is a sequencing soft-

ware based on a spreadsheet concept. Some of the leatures are real-time & step-time recording, 85,000 notes, 2048 tracks, crescendo/diminumdo, dynamic ctrl , delete, & copy modes. loops & nested loops & much more \$150 For more reformation write or call The Midi Connection

PO Box 282 Stn D, Montreal Quebec, Carada, H3K 3G5 (514) 933-5127 Dealer inquiries invited

with simple English commands. Requires terminal emutators for non-PC applications. Visa/ MC/Ck/PD \$99 BOSTON SOFTWARE SYSTEMS, INC 76 Whitney Street

PREVENTATIVE MAINTENANCE

Memory Minder

Memory Minder is the most congrehensive disk diagnostic program available for mercocompactics. Are operate can quarkly and easily check the stal operating parameters of their fluory divers, including javable specificated adjuncter, read sensitivity and others. But Memory Minder before vital data backup operations. Use it to align the driver settled. the use of an oscilloscope BBM PC, XT, AT program and manual \$70 Precision Migment Delectes sold separately \$40 cach, 5 25* 40 track, 5 25* 80 track, 1.2 MB AT, or 3.5* 90 track down.

J&M Systems, Ltd. 15100-A Central SE Benquerque, New Mexico 87123 505/292-4182

MAINTENANCE & INSPECTION An easy-to-use compulerized method to orga-

nize, operate, and control an effective preventive maintenance system. Applicable to any type of business or industry. Full screen input and displays, plus function key help command. Mainlains histogral data invates work orders, and remodes numerous reports. For info, write to DENCH IN COMPLITER CONSULTANTS PD Box 20465 San Jose, CA 95160 (406) 997-7703

Turbo Maintenance Meneger" A user-friendly maintenance management system for processing work orders and equipment data records. Automatic PM peneration, parts

inventory and reordering, vendor records, em-ployee work load, and Dirty Dozen" mainlenance priorities. Lightning fast with extensive reporting. For information or demo Owen Engineering 5353 West Dartmouth, Suite 407 Denver, Colorado 80227

1303) 969,9393 **COMPUTER CARE KIT \$29.95**

You cannot afford to be without your own main-tenance kit containing. Anti-Stat. Screen Clean, Cabinet Care, Air Duster, Head & disk city: & Hitek electronic degreaser, all you need in your own 6 Pack of Aerosols for regular preventalive maintenance of Hardware. For the user who cares & values their equipment. Tel: 800-922-2435 Glade Chemicals (Computer Division) 12629 N. Tatum Blvd: Ste 566 Phoenix, AZ 85032 / \$4 95 s/h MC/VISA - AZ Res +6 7% tx

TO PLACE YOUR AD IN PC Magazine

Classified Marketplace Call (212) 503-5115

PUBLIC DOMAIN

TURBO PASCAL \$2/disk TSS is a BBS-by-mail, no modern needed (long distance is more \$\$\$ than mails? 90+ disks of Pascal files. Most incl. source code. All files compressed. Membership lee (\$25) incl. Free starter plus and 2 FREE disk with 1st order. Nonmembers \$7/disk. Cat. list \$5. VISA/MC/COD (s/h extra) (data) 617-545-9131

TURBO SOURCE SEARCH PO Box 876 Schuste, MA 02066 (Voice) 617-545-6677

PUBLIC OOMAIN Public Domain and user supported software for IRM and compatibles · Get more bytes for the buck!

. 100's of disks and 1000's of programs . Low as \$1 25 per FULL disk. . Send \$1 for directory disk set Visa, MC accepted US/PO LIBRARY

226 N Main Clinton, TN 37716 615-457-2130

** 1-800-262-6053 ** IBM P D & User Supported software, as low as \$150 per diskettell! If you are curious or a long time user, call our 24 hour order line and ask for

a hee catalogue. The newest and best, all types from accounting to word processing. Call NOW! (MS 601-428-5722) SOFTWARE CAFE 1125 West 10th St. Laurel, MS 39442

1-800-262-6053.24 hrs IBM P.D. SOFTWARE ... Our FREE catalog contains the best Public Do-

man & Shareware selections for IBM and compatibles available. We offer hundreds of DSDD disks with Word Pro/Games/Util /& so much more for business or home use. At \$3.00 per 5.25" & \$5.00 per 3.5" Fastest service around MC & VISA IDK/PC

PD Box 1561 Corona, Ca 91718 (714) 734-7075



sheets, diliese program hies contamed on the as. We ship on MasterCard, Visa, or COO P.O. Box 3061 Warner Robins, GA 3109 1-800-843-5084 - 1-912-922-0093



PURLIC DOMAIN

IBM PUBLIC COMAIN \$3/OISK IBM & Macintosh software for a \$3 copying fee Over 500 library disks full of quality software Thousands of useful programs for a variety of categories. These include games, word proces-sors screadsheets utilities, and more Send \$2 for a catalog and order form. Please add \$1 for s.th. Fumy 5th risk hard New England Computer Services PO Boy 1424 Dent I Concord, MA 01742 (617) 369-0329

\$3.00 SOFTWARE FOR IBMPC Hundreds to choose from, wordprocessors, data bases, spreadsheets, assorted games for all ages, communications, business, music, art, programming language and useful utilities for making your computer easier to learn. Most programs have documentation on the disk. Write for your FREE catalog todays BEST BITS & BYTES PO. Box 5332: Dept. M.

North Hollywood, CA 91616 REAL ESTATE

COMPLETE REAL ESTATE

INVESTOR ete Property Analysis PLUS Creative Financing Reports, Proformas, Amortizations, Depreciation, Year-byyear Analysis, etc. result in huge positive cash flow in Real Estate Easy to use & 30 day guarantee! \$495 w/Tutoriat. Demo

avallable I SOLUTIONS I PUBLISHING, INC. Cincinnati, Ott 45256 CRCLS 773 ON READER SERVICE CARE

NORTGAGE LOAN CALCULATOR Qualify buyers by loan type, income, Mo pay, or nome purchase. Enter one item, calculates the others plus taxes, down pay, PMI/MIP, expenses, points, clas costs, cash required. Do what if with rate, from debt, etc. continualities and counseling reports with amortization schedules. Price \$165, demo avail HMS Computer Company 2401 Pilot Knob Road, #108 Mendota Heights, MN 55120 (612) 452-5928

SS INVESTMENT ANALYSIS SS No one makes analyzing income producing property easier (free demo) with such priceperformance comfort at \$170. Stand alone, fully compiled loan arrort, and deprec schedules, 1986 tax changes, custom features. Cash flow and detailed sale analyses uncover buy/hold? sell/refin /exch decision insights. The SOFT ESTATE Five Villa Verde Dr., suite 110 Buffalo Grove, fl. 60089 ** (312) 259-6301 **

REALESTATE

PROPERTY MANAGEMENT SOFTWARE FOR HIMPS and PS COMPRTHEES *295** To Stand Solind Our Product

metration (Ital Analiable I pon Request Will handle up to 30 peoperates -00 unto rach (Mard Daik Computate)

epontes Ct for soft red • Brees in V record of return on investment & lacture respi-tioners Income primerin & Berg parament & Lar ages & Ulakov & Martigar & Zano & Simmer-aped reproducers & Profession statement & Sacust to 40 ares defined categories & Sacust vesible dedices are 40 ares defined categories & Sacust American creates as 44% or anex. He others decide and

(718) 456-9833 COMPUSTAR 187-02 Recordle fre. St Albans, NY 17412 CRECUS 774 CW READER SERVICE CARD

PC REAL ESTATE SHAREWARE A decision tool for brokers, investors, and those who would like to learn Perform investment analysis and forecasts of

derital income and commercial properties. 1986 tax changes with transational rules (don't worry, we've made this easy) KAREWARE .. OK TO COPY AND SHARE \$10 for complete software and mark made \$75 for full membership (manual, tax updates, phone support, customized herocopy) SHAREWARE SOFTWARE 731 PACIFIC #41 San Luis Obisso CA 93401

(805) 541-8251 24hrs VISA-M/C **MANAGEMENT & ANALYSIS** "Real Property Management" \$395/\$595 for idental & commercial properties and other bkip'g. Flags deling't tenants, prints budgets, checks, invoices & 1099S. No retyping of recurring data. " "Real Analyzer" \$195, when decid-

ing buy/self, exchange, or ref. 30 DAY MONEY BACK REAL-COMP INC. PO Box 1263

Cupertino, CA 95015 (406) 996-1160

Real Estate Matchup® REM* (An Enable* (Editor's Choice, PC Mac.) template. Software for any single or multiple resilty office USA Handles multiple listing needs Matches and manages listings/prospects for all properly hopes also sales rentals cinsings bookkeeping, etc. REM and Enable for \$895 Orders and into 803,878,2100 REM (outlest light ACS-AZR-2100) 102 Court St Pickets, SC 29671 SOILE 34, 3470 / Nat 1 Fnahle into 800-551-1004 (N.Y.) Enable into

REAL ESTATE TEMPLATES For Lotus 1-2-3 or VP-Planner. Complete 10-year sensitivity analysis leash flow projections for income property, resinon-res. Also includes Lease Analysis, annual operating statement, amorb ration schedules and wrap-around mortgag analysis Professional quality reports \$189 + \$6 1/h 30 DAY MONEY BACK CHARANTEE REALTECH SYSTEMS 406 South Bascom Ave., Suite 223 San Jose, CA 95128 408-294-4429

PROPERTY MANAGEMENT

Comprehensive program for managing residental and commercial properties. Many manage ment reports including operating statement delinquent rent, lease expiration and transaction register report. Provides check writing, check. reconciliation, posting of late fees, recurring ex-senses—\$395 Investment Analysis—\$245 YARDI SYSTEMS, INC

930 Lagura Street Santa Barbara, CA 93101 905,887,8365

PROPERTY MANAGEMENT Since 1978 over 6,500 users of our software have

found i comprehensive flexible and easy to use We offer systems to manage the following types of properties COMMERCIAL/RESIDENTIAL/ CONDOMINIUM/HOME OWNERS ASSOC./ MINI-STORAGE FACILITIES For more info and sample printouts call: REALTY AUTOMATION, INC. 2539 Saleroso

Rowland Heights, CA 91748 818-913-1244

ANALYSIS & MANAGEMENT Completely menu-driven 123 w/s developed by CPR/CFO of multi-million \$ builder * ANALYZER computes cashflow, mortgages, dept. taxes, ROI. & sale - 1986 Tax Act MANAGER accounts for period, properly, tenants \$29 95 each, \$49 95 both, add \$3 s/h IA+45% VISAIMO COMPASS MANAGEMENT CORP. P neM NESS Whorkfork VII.72984

HOMEWORKS \$40

Home-Buyers, realfors, lawyers, bankers: Com pute mortgage, payments and totals, any pa ment period, balloons too! DETERMINE \$5\$ YOU CAN BORROW Print detailed amortization schedules and yearly totals. Name & save cases. simple case management Full screen, windows, help, tast 256K, color/mono, 30 day \$back quarantee \$40+5 s-h chk/Vrsa/MC KEEP IT SIMPLE SOFTWARE, INC SRI Fifth Avenue

New York, NY 10036 800-543-KISS 212-764-KISS

RELIGION

PowerChurch Plus!" Fast, friendly, reliable church administration system. Full fund accounting, marting lists, membership, contributions, attendance, word processing, accts payable, payrolf, multi-user support, and much more - all for \$495 complete. Uses up-to-date software technology. Unlimited capacity Full working demo \$10 Call loday.

CHURCH SOFTWARE

Easy to operate, menu driven. Family, member,

financial into & reports fully integrated. Selec-

F1 SOFTWARE PO Box 3096 Boverly Hills, CA 90212 (713) 854-0865

PARISH DATA SYSTEM" Comprehensive census/contribution program

live lists, labels, contribution/fullion statements, personalized letters. User can create own reports, letters. Other church programs avail able Over 1600 users. Free into Parish Data Systems, Inc. 3140 North 51st Avenue Phoenox Aruzona 85/031

(507) 247-3341 MEMBERSHIP MIRACLE

Too of the line, full function, church mgt systom. Full support for membership, prospecting, contributions, customized marting, word pro cessing, and accounting. Powerful fund drive support speeds economic payback. On-line help functions For IBM XT/equiv. Free tutorial disk Full demo \$35 Call Elegant Solutions

** 2577 North Downer Ave. Suite 210 ** Milwayane, Wisconsin 53211 ** (414) 332-0774

RELIGION SOLUTIONS

\$149.00

Scott-Sinclair TOPICAL Bible * Entire Bible *Quotations * Illustrations Display on screen what the Bible says about...? Marriage, Drugs, Trinity, Children & Heaven You can create your topics and add scriptures.

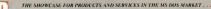
TRM 512K & Hard Drive RAM Concordance \$50.00 Pastor's or Music Minister's Toolbox \$99.00 Church Manager's Toolbox \$399 for Sept. (reg. 499) 4567 James, FT Worth, TX 76115 (817) 923-7731

CIRCLE 775 ON READER SERVICE CARD

Disk

\$3.00

Cac





MARKETPLACE

SALES MARKETING

FOLLOW-UP Software for Salespeople

Manage your pares activities win FOLLOW-UP. Treck prospects by ete, dollars, products, salesperson or eny of 22 other enty fields. Fest & easy to use with on-line help of every point. Follow-Up is now in use on desklops end leptops all over the

- country by business small & lerge Keeps history of sales cells Wide renge of reports Tickler & Appointment Celender Keeps track of things to do
- Several user defined data fields
 Melting Lobels & Mel Merge files
 Telemarketing features & more
 \$89.95
- FOLLOW-UP PLUS has all the feetures of the standard package plus:
- Pessword protection for multiple users theo levels!
 Import feeture for existing ASCII
- Import feeture for existing ASCII files from other sources
 Much more detailed and flexible sales forecast entry & reports

Much more detailed and flexible sales forecast entry & reports Transfer & menge selected date between computers \$179.95

XYCAD Group 1977 St. Clair Ave Clevelend, Oh 44114 500-425-8457 In Ohio (216) 569-5788 DRICLE 776 ON READER SERVICE CARE

WATSON
And your PC Add digitally record and soft your Voice on a hard disk, then answer your prince you alward disk, then answer your prince you have been and the A 300/1200 beach modern Watter brailers, and the A 300/1200 beach modern what makes dictation, function switching and time sharing. Watson has phone time billing parcenting, phone did beach inselling this processor, with the prince of the prince

E. McKessport, PA 15035 (412) 824-7822 VISA/MC & Soon Discover

TO PLACE YOUR AD IN

PC Magazine Classified

Marketplace Call (212) 503-5115

SECURITY

ADVANCED COPY PROTECTION Free Demon Diskette

The world's leading software manufacturers depend on Softguard copy protection systems.

Now Softguard introduces the Protection Kit—a complete software duplication and copy protection system for your IBM-PC. And it's invisible to your end-users!

- Hard disk support with install/uninstall.
 No special media required
- No special media required.
 No source code changes.
 Stops all copybusters.

 Machinosh Copy Protection also as atlabb.

SOFTGUARD

2840 San Tomas Expy., Suite 201 Santa Clara, CA 95051 Call 408/970-9240 CINCLE 777 OH READEN BERNICE CARD

EVERLOCK COPY PROTECTION
Designed for user-transparency, clone compat-

billy & strength. It leatures

-co need for damaped medic or \(^1\) plugs
-co need for damaped medic or \(^1\) plugs
-co need for damaped medic in or \(^1\) plugs
-most network systems supported
-matable number of installs (0-99)
-dema diskettle option with whick
-allows protected upgrades by modern (BBS
All this to \$456 with no meter county.)



Az-Tech Softwans, Inc 305 East Frankin Suite A4A Richmond, MO 64085 (800) 227-0644 (816) 776-2700

(\$10) 227-0644 (\$16) 776-2700

Pracy SLRNVM. 5 YEARS protes efectiveness of operation multipleved security Rigid decryption apport time. Relabel is mail port harmsparent security device PRAILLEL or SERIAL port Countries and timeout options also available. SEY-LICE countries and timeout options also available. SEY-LICE countries also set 1281-LICE cost MICROCOMPUTER APPLICATIONS. TO SEY OF THE SEY OF TH

XEMAG PROTECTION SERVICES

XEMAG's new Cloaking Device Protection for IBM PC's

Protects against all known and hardware copiers.
 Install/Uninstall for hard desystems

systems

Allows a predetermined numb protected back-up copies.
Easy ments driven installation onto your software

Protections for all format
Division of MDEX Corp.

1-800-367-6217 CRICLE TYS ON REACHS SERVICE CARE

HANDS OFF
USBRUDENCES

HANDS OFF THE PROGRAM
is an all software, privilege based
system security utility protecting
up to 64 individual users.

HANDS OFF features:
- System Boot Control

System Society Control - System Society Control - Data Encryption - Data Encryption - System Access Reporting - Maja - Ma

SHAREWARE

GREAT SOFTWARE, CHEAP! Only \$5 95 per disk for absolutely smashing Shareware and Public Domain programs!

Money-back guarantee PC-Outline, AutoMens, PC-Ney Oraw, PC-Oeskirbann, PC-Winte 27. PC-Winte 27. DOSarmate, Unitine Galoney abs Databases, Acade and Advanture Garmes, Lots more IEM PC. PC Jr. and compatibles Send for free catalog SANEYMANE COPRESS 3887 Del Obespo, Suite 102 W

San Juan Capistrano, CA 92675

OISK-O-MANIA

IBM Shareware Disk-of-the-Month club. Each members are given the apportunity to evaluate fine of our horiest MS-DOS shareware program disks. Simply keep those you like and return what you don't need Pay as life as \$2,00 each for those you keep. No obligation, no minmum purchase Erroll today by sending a \$4,00 eshundate opportunity.

Disk-O-Mania PO Box 6429 Lake Charles, LA 70606

SHAREWARE

RENT SOFTWARE 51 per DISK Rent 100% of user supported A public domain programs for 31 per deligit Lit or see us low cost copy service Business, Francu, Lilliéns, Games Graphics & mach more Seed 55 to sampler disk Monrey Back Guaranteel Visa1MiC Welcomed Send a 195 SAES for catalog or call 24 he infoliation 619-941-2244.

Vista, CA 92983 MON-SAT, 10-6pm(pst)619-941-9761

STATISTICS

Pick & Choose for Your PC BMDP Statistical Software offers 40 programs

for data analysis. But you can choose any combination to sort your needs. From simple statistics and plots, to 1-tests, AMOW, AMOW, stepwise regression time series, frequency tables, survival analysis and more! Call for your free catalog hard dok rept.

BMDP STATISTICAL SOFTWARE

BMDP Statistical Software, Inc. 1440 Sepulveda Blvd Los Angeles, CA 90025 (213) 479-7799

STAT 1—By Sugar Mill

Friendly meta-driven speckage on 2 clicks with Help, full screen data & level effort, slight hardforms, import & export data, save results, disscription, fielder, in-may AMOVA, AMDOVAN, AMOVAN repressions in sessi craneless spear & factor enalyst. Skep-by-step examples in mancus 1529 95 Subert for 1529 55 MiCNESS, SUGAN RELL SCF IMMOV ST. 500-263 - 1536, 600-306-2366 1-200-363 - 400-62 256

RATSI Version 2.0

BATS, the best setting Econometric software package, now includes daily and weekly data, and may be easier to use OD page marraut, and many advanced features. Use PATS for time-series and cross section regission, including OLS, ARMAN, VMI, logit, and profit IBM PC or compatible SQUI MC/VISA Call for terochure VMP Econometrics, linc. PO Box 1915 Econotics, 1, ECQ04-1816 (212) 864-1910

STATISTICS CATALOG!

If you need statistics for BM PC or Apple II, call us and let our technical advisors help you find the statistics programs you need. Write or call new to get a FREE catalog of statistics software. HSD

9010 Reseda Blvd , Suite 222 Northridge, CA 91324 1-800-451-3030(NAT) 1-818-993-8536(CA)

FOR MORE INFORMATION OR TO PLACE YOUR AD CALL 212 503-5115 . . .

STATISTICS

StatPackets™ for LOTUS®

NFWI 23 comprehensive statistics and forecasting modules for analyzing LOTUS worksheets. Low cost \$24.95 each. Easy to use. Includes tutorial. Basic and advanced statistics with graphics. Free brochure

WALONICK ASSOCIATES, INC. (612) 866-9022 (OII S a retirement of Lots Development Com-

CIRCLE 780 ON READER SERVICE CARD

The leader in using com ched accuracy in tim forecasting. ucts to choose from Call for free informati

1-800-223-5166 In WI (414) 436-2341 WISARD Software C

333 Main Street P.O. Box 19730 Green Bay, WT 54507-0730

STATISTICS

BELIEVE IT!

StatPoc Gold™ with the Forecast Plus™ Option is the Most Powerful Statistical Analysis and Forecasting Package Available for the Microcomputer

FREE Comprehensive Brochure: 1-800-328-4907 WALONICK ASSOCIATES, INC

(612) 866-9022 CIRCLE 783 OH READER SERVICE CARD

TRAINING

"Training is our Middle Name" Learn bow to use your IBM-PC with ATT's

grams. ATI has been wated best to products by the readers of PC World Mana rine three years in a new Products include WordPerfect and over 50 other from \$49.95 Call today

(213) 823-1129 (se Cald) (800) 421-4427 CORCLE THE OW READER SEE

STATISTIX

A powerful yet incredibly easy-to use statistical system. Outpedorm rograms costing much more. Flexible data management and ransformations, mult. regression, ANOVA, most standard parametric and non-parametric tests, p-values s, histograms and many others.

SATISFACTION GLIABANTEEDI and \$2 for dame disk (IRM only) PCARS-DOS - \$169 Apple II vinicGS - \$69 5 or more copies: 20% off Resevote MH 55112 NO Amelytical Softwar PO Sen 19994 CHICLE 781 ON READER SERVICE CARE

P-STAT®

Full maintrame package for IBM PC/XT/AT & compatibles Combines data & file management data display, statistical analysis, rece writing & survey analysis in a single package 4GL programming language, online HELP, menu or command drawn with interactive FDITOR \$95 demo and Site License available D. STAT No.

471 Wait Street, PO. Box AH Princeton, NJ 08542 609-924-9100/Telex 466452

NCSS plus-\$99 Easy-to-use menus & spreadsheet. Multiple & Stepwise regression T-lests ANOVA (up to 10 factors, rep measures, covariance) Forecasting. Factor, cluster, & discriminant analysis. Nonparametrics Chi-square & Cross Tabulation Plots histograms, box, scatter, stemleal Sort Subset Transformations Reads ASCII from Lotus, Dhase, etc. 250 page manual 30-day money/back guarantee. VISA/MC

865 East 400 North Kaytylle III RATTO Phone 801-545-0445

NEW TRUE EPISTATI

ssional stats can still be friendly. Compiled, fast. Data files up to 10,000 rows. Over 100 procedures, supports Hercules mone, CGA & EGA color, 8087/80287 SOF data files, 25 graphs, 250 page typeset manual, over 100 examples on disc. Formulas-references for every test. Not copy-protected. Call or write for more? **EPISTAT SERVICES** 2011 Cap Rock Circle Achantson, Texas 75080 (214) 680-1376

STAT PLAN HI

Easiest to use statistics program available Complete range of statistics-curve fitting crosstatis, correlation, multiple regression, 7 tests, etc. Graphics with printer/plotter out-put. Capable of handling over 50,000 data points, interfaces directly with jobus tiles. Demo diskette available MC/VISA Only \$179. THE FUTURES GROUP 76 Eastern Blvd. Gastonbury, Ct 06033-1264

(203) 633-3501 THE SURVEY SYSTEM

An easy to use menu driven system for the entry editing, processing and presentation of ques bonnaire data. The system can produce carnera ready crosstabs and other tables in barrier tomat Also, statistics and bar charts Regression and open-end coding analysis options available CREATIVE RESEARCH SYSTEMS 1649 Del Oro Petaluma, CA 94952 (707) 765-1001

THE BASS SYSTEM" SAS*-like Power on a 256K PCI BASSBase ru

manySAS programs on a 256K 2 feets PC BASSViewgives a true windowing invironment BASSStat (in beta testing) adds an expanded stat pack, *SAS a SAS institute TM BASSBase-\$95 BASSBase/View - \$159. RASS Institute Inc. P.O Box 349 Chapel Hit. N.C. 27514 919-489-0729 RB 919-489-9665 (N B 1)

SIGSTAT SIGSTAT includes over 70 programs of the BMO

statistical series, plus many advanced new leatures. Mainframe capacity (up to 80 var.) for uni—is a. ANOVA regression) + multivariate (e.g., canonical, factor) analyses, time-series, itidim scaling, crosstab, plots, q/c and more 8087 support out, 256K, DOS, \$595 SIGNIFICANT STATISTICS 3336 N Carryon Road Provo. UT 84604 (901) 377-4860

BASEBALL ** BOWLING BASEBALL LEAGUE STATS-maintains a full set of batting, fleiding and priching statistics and

complete game by game histories BOWLING LEAGUE SECRETARY-maintains and updates all necessary records for learns and individuals in small or large Isagues Baseball-\$39 95 Bowling-\$44 95 Visa/MC Mighly Byte Computer, Inc. 6040 A Six Forks Rd . Suite 223F Raleigh, North Carolina 27609 1-800-237-7072

TERMINAL EMULATION

Term/Comm Productivity Tool
Product remutates VT100, VT52, DG210/211. IBM3101 Vidter and two connections at same time. Learn mode lets your PC create autolo-gors and other scripts. Remote operations, exit to DOS white connected customize your own menus and 5 file transfer protocols including batch file transfer Only \$69.95 PEREGRINE DATA SYSTEMS INC 5365 Baron Drive San Jose, CA 95124

> THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

UTILITIES Opt-Tech Sort/Merge 3.0

Extrernely last Sort/Merge program, Run as a DOS command or CALL as a subroutine Unlimted flesizes, most languages, datatypes & fletypes supported including Brieve and dBASE II & III. Advanced features include record selecbon, record reformatting & much more! Call or write for more info MS-DOS \$149 Zenix \$249 Oet-Tech Data Processing PO Box 678

Zephyr Cove, NV 89448 (702) 588-3737

SSI1-Screen Saverl \$19.95 Protect your CRT screen from image burn-in with SS/1, the automatic RAM resident screen saver CRT blanks after user defined time limit, instantly restored at the touch of a key. Hot-key loggles screen on/off. DOS 2/3, 656 bytes. \$19 95 + \$3 s/h, CA add 6.5% IOTT SOFTWARE SOLUTIONS Dept A01

2210 Witshire Blvd. Suite 713 Santa Morica, CA 90403 (213) 452-9144

EMPrint Maximize printer efficiency & flexibility. New res-

ident utility allows easy keyboard control of single or multiple printers. Lets you quickly swap printers, print all or part of screen, send strings, define macros, format output Works with most software \$75 incl s./h, Visa/MC, 30-day rek-free 1303 Clear Springs Trace, Suite 204 Louisville, KY 40223

(800) 426-3776, or (507) 426-9448 in KY WANT POWER? GET XANAOU!

Finally, the unity package you have been waiting for! The highly acclaimed Xanadu Utilities a 'e a PC user's dream come true. You get 3 of the most useful utilities around including the la mous HotDir sorted directory plus SFINO and PCSTAT \$35 - Money back guaranteel Call with MC/Visa - nish delivery *** Xanadu Compusolt ****** *** PO Box FF Dept PM *** ** College Station, TX 77841 *

408-356-6105



THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

UTILITIES

*** IBM Uses CP/M & Apple *** "The best", "strongly recommended" - PC mag • Uniform cooles files, reads & writes · Uniform cop to 200 CP/M disk formats on the PCXTAT - by Micro Solutions \$59.95 + \$3 S/H font 1/2 card transfers Apple DOS

SOS CP/M and ProDOS Nes to IBM PC,XTAT -\$185, \$3 S.H finely dec FREE Hodormit 1108 S. Second St.

DeKalb, Minors 60115 (815) 758-2355

SPEED DISK I/D THROUGHPUT OUICKCACHE -- Intelligent disk I/O management subsystem for PC/MS-DOS 2.xx & 3.xx Capable of making programs run up to 14 times faster Al parameters dynamically alterable UM ory supported 40 KB min, required \$49.95 + \$5 s&h VISA/MC 30-day guarantee PR GLASSEL AND ASSOCIATES, INC. 30255 Fir Trail

Stacy, Minnesota 55079 (612) 462-1337

PADLOCK/PADLOCK II DISKS PADLOCK lumishes the user with a method for providing protection against unauthorized du-plication from DOS commands \$99 PADLOCK It disks come preformatted with linger-print and serialization. PADLOCK II disks offer superior protection. Ask about our HARD DISK protecon with uninstall capability MC/VISA. GLENCO ENGINEERING

3920 Ridge Ave. Hts. IL 60004

ScreenWorks - \$99

monitors, PC types.

wWorks - \$40

lete screen management

Best panel editor and designer;

design your most complex screen

in 10 minutes. Supports Microsoft.

Lattice and Turbo C. Superfast

screen handler written in as-sembler as BIOS extension, 100

library routines give full control of screen, fields, colors and

keyboard. No royalties. 265K, all

Using a PC becomes as easy as turning it on: Start up all programs

from a menu. Customiza selection

up menu; easy to change. Fast

SPRINTER PRINTER CONTROL Unlock your IBM/EPSOM printers capabilities Access all Fonts, modes, vertical and horizonta tabs, line spacing—everything your printer CAN to-from a simple menu. Full documentation 30 day money back quarantee+++Free Ram Oisk if you order from ad \$69 post paid. LFS SOFTWARE DESIGN PO BOX 23505

(313) 537-4445 RECORD/PLAYBACK KEYSTROKES TOTAL RECALL records an unimited number of

knystrokes and plays them back after a failure or mistake. Also for demos, running interactive programs in batch, or repeating keystrokes. 3 playback speeds plus ACTUAL for timing senstive programs Built-in edit. PC/XT/AT Compat \$79 VISA/MC 30 day guarantee. COMPUTER FOUNDATIONS 2604 Elimwood Avenue Suite 320

ochester NY 14618 (716) 586-9756 **** exSHELLentf" ****

DETROIT MI 48223

Easy and efficient disk management. Features include: Directory Operations (make, rename, delete movet Ede Operations (copy move, delete, rename, append, print, change attributes, new, execute); Graphic display of directory MS DOS 2/3 Not C/P \$29.95 + s/h for first 1000 copies sold, then \$49.95 MC/V/SA/Check ***** Bluebonnet Publishing Inc. **** 1301 W Hey 407 Suite 201 Box 303 **** Lewisville, Toxas 75067 (214) 436-0648

dirWorks - \$40 Enhancement of PC Editor's

Choice DOS Shell. Complete disk management made simple; erase, rename, format, all directory commands and TONS more (e.g. set AT CMOS clock. hardcopy of directory, set file date and time). Multiple file and direc-tory operations. Sort and select by time, date, and alpha etc. Edit execute without going to DOS, Full screen, pop-ups, help, cus-

Magazine

tomizable, fast, easy, powerful. n. Just press hot key or Tab and Enter to run. Prompts for input All products come with a 30 day If needed. Superslick editor to set money back guarantee. Please add \$5 shipping and handling for 1, and \$10 for 2.

Check/VISA/MC KEEP IT SIMPLE SOFTWARE, INC

Full screen windows, help, 1968 580 Fifth Avenue New York, NY 10036 800-543-KISS 212-764-KISS





"BOOST YOUR PRODUCTIVITY WITH A BUNDLE OF FAST, POWERFUL SCREEN AND KEYBOARD UTILITIES!" Speed up screen writing 2-6 times!
 Add zip to cursor keys 2-5 times! Get 43 lins EGA support
 Extend your ANSI SYS to VT100
 Over 60 useful options!
 Works well withousends of progra

 Get back up to 800 scrolled pages
 Seve valueble scrolled into to disk . Used by thousands since 1984 Free your eyes from scroll blinking "The Best of the Best Unities" "FC Magazine Jun 23, 67 pg 281
"The implementation of all the services provided are at least as good in Fensi-Console as in any competito" "Capital PC Monitor My 66 pg 25 "Another of those unbenabled germs! avoid not each to live serbout"

'Clear readable highly professional ma -Computing Canada Fab 5, 67 pg 25 **FANSI-CONSOLE™**

The Integrated Console Utility TM
Pay Less and Get More! Only \$75! (plus \$4 s/h in 48 states) 400p Manual (w/sip case) & 2 Copyable Disks With No Risk, 60 Day Money-Back Satisfaction Guara CALL (313) 994-3259 NOW TO ORDER (Visa/MC/AmEx)

MICRO CONSULTING, INC., Box 8276, Ann Arbor, MI 48107 a 798 OM READER SERVICE CARD TO Get FREE Brochure w/Reprints

SELECT: Automenu" Create one menu system to run all your programs, batch files and DOS commands "Insulates" novices. many options for power users On screen help, password protection user-defined prompts Written in assembler 16K size Over 10K sat fied users. Money back guarantee



\$50, checks/VISA/MC, Call or write

MEASURE EXECUTION

TIME TO THE

MICROSECOND

Ammunition to conquer your biggest problems!

The Virtual Expended Memory Mi provides your EMS applications with eight megabytes of expended memor e it turns PC/AT extended memory into B turns hard disk storage into expended memory N's competible with most EMS ago including 1-2-3. Symphony and Re

Fort's Software P O Box 395 Mandettan, KS 66 (910) 537 2897 V-EMM CIRCLE 794 ON READER SERVICE CARD

HELP SYSTEM/DEMO GENERATOR Create a Help System or running Demo for any production in just a few minutes. This memory resident program called "The Pointer," will let you get help for anything, at anytime. Demo pro-

has a user interface that redefines the term "user friendly." Menu driven, no complicated commands No royalties \$129 95 Stau Enterprises Inc 3650 Kanef Cresent Suite 1806 Mississausa, Ontario, Canada L5A4A1

mods to your program Just 1910. execution time to the next display output Use with MS debuggers to measure time for your program from go to breakpoin Independent of CPU type and clockspeed Disk I/D time broken out separately 01/4 \$59°5 +350 sth +8% NJ tak CUSTOM REAL TIME SOFTWARE, INC

STOP

DOS-ON-CALL"

Tired of leeling "fenced in" by programs that won't let you talk to DOS? D-O-C is a new ubliny that opens up a window to DOS, giving instant access to the full DOS command processor Now you can run any DOS command you want from any program, any time, at the touch of a key "it's like having a DOS command processor in every congram" \$69, \$50th Vice/MC/Cht-M4 58s Personal Business Solutions, Inc. PO Box 739, Dept 88 Frederick MD 21701 301-865-3376

(416) 270-6673

FOR MORE INFORMATION OR TO PLACE YOUR AD CALL 212 503-5115 . . .

UTILITIES

VCACHE GETS YOUR DISK

MOVINGE tard disk acc tridge and fixed disk operations using memon caching to eliminate repetitive disk access. Al-locate up to 15 Mb of extended or expanded memory, or .5 Mb of standard memory for caching disk data. Includes diskette and screen accelerator modules. Automatic and transparent



GOLDEN BOW SYSTEMS 2870 Fifth Avenue, Suite 201 San Dego, CA 92103 619-298-9349

HARD DISK DIRECT ACCESS* 4.0 The Ultimate Hard Disk Menu System Orga nizas your sollware programs into a "user defined" menu system. Features single key stroke cess, lime usage tracking, custom applica-ins, plus much more. Order toll free today, 30 day money back guarantee MC/Visa Wei \$89.95 + Shipping, To order: 1-800-242-MENU



DELTA TECHNOLOGY INTERNATIONAL, INC. PQ. Box 1104 Eau Clair, WI 54702 For Mora Into: 715-832-0958

> lun **your** soltware worry free without hardware locks or keycards \$99 US each NetSAFE for Novell v2.0a VancSAFE for CADvanca KeySAFE for CADKey Also programs for: AutoCAD; RoboCAD &

Radboard; Touchstona; LispSAFE for editing third party LISP programs \$65 US Our products should not and are not intended for production of software or sale or trade or for any purpose hat would deprive author of

Call for other product availability VISA or American Express ders welcome

For Programmers Compiling in BASIC • C • COBOL • FORTRAN • PASCAL • dBASE

GLENCO ENGINEERING is committed to providing professional programming tools. These sub-routines are completely debugged, and fully documented. Hand crafted in ASM, you are assured minimum size and maximum speed. You will literally save hundreds of man-hours in design, program and debug time. All are CALLABLE routines in .OBJ or .COM format. Please specify language and computer, NO ROYALTIES.

Pop-up windows, vertical menus, help screens Set all borders, colors, size, position, Window editor included Over 25 commands . . SQQ

Severel low level ROM BIQS routines. Catenes: KEYBOARD, PRINTER, COMMUNI-CATIONS, VIDEO and MISC

Allows virtually any DOS file operation from inside your progrem. Read or set a files' Attribute, Mode, Data, Time, Check Write protect tab, free space, dir. sag

*Buy 4 get 5 Multiple purchases Call or Write: discount and

3920 Ridge, Arlington Hts., IL 60004

keyboard enhancement commands. Menus return integer and text allowing context \$00

Alter OOS internal switches from inside you program. Read or set DTA. Interrupt Addrs. Verify, MEM, default drive, I/O and ag

Over 80 subroutines to interface to NETBIOS Transaction process, multitesking, communications, end more.... Works with any system supporting NETBIOS, or eavit. 5799

• IEM* Telex 493-7109

AT TO A PC

hardware or software modifications. A 360K floppy drive is not required CPYAT2PC* may reside on you AT herd disk and copies 1 file or ent subdirectories in 1 step. Price \$79

MICROBRIDGE COMPUTERS INTERNATIONAL, INC. 655 Sky Way - Suite 125 San Carlos, CA 94070 1-800-621-0851 Ext. 777 CINCLE 792 ON READER SE

BREAK 640KI

Why buy expensive boards? VRAMT gives vo. PC/XT/AT 8 megabytes of memory by luming disk space into expanded memory! Use exlended memory for expanded memory. Create VERY LARGE worksheets. Never run dut of memory FAST 640k not required Ute with T-2-3, Symphony, and other EMS programs. \$49

+ \$34M BOLDGIC COMPANY 11962 Coverstone Hill Circle, Siz 1622 Manassas, VA. 22110 (703) 368-2949/Chk-C00

TurboKEY 1.1 The Ultimate KB Macroprocessor

Browner v user installable file library Typewater Emulator & printer control Owner Data Encryptor DOS Command Stack Install User's TSA James

Also includes cut & passe, surto-boost cursor acreen blanker, Kill look, alternate leyouts, ore also outsign online help, and more nim \$60.95 + \$3.56H NY no. add 8.251 Deck MO COD "Dealers Invited" SOFTLAND Internation P.O. Box 1040 Madrew No. New York, NY 19018 (212) 295-5457 CIRCLE 793 ON READER SERVICE CAR

SoftJet for LaserJet HP LaserJet printer Accepts output from any

application(s) and presents luft-page screen previewing at 40 pages, train. 200M in for a detailed view Can be run stand-alone or memon resident. Supports all text/oraphic PCL commands and cathridges A.B. and F CGA/EGA/Hen \$79.95 (US)/add \$5 s.h. + \$10/cartridge THETA Systems Corporation 307-2150 West Broadway Vancouver B.C. Canada VBK 4.9 VISA/MC (804) 732-4323

key. Create menus easily with a built-in menu generator. Features a powerful on-line help system, password protection, support for customizing menu selections with special prompts, help and program directives. Also includes function keys for locating lost files, viewing directories, copying files, and more. Site licenses available. PC/XT/AT \$58.95

PC Dynamics, Inc. 31332 Ve Colnes, Suite 102 Mestave Village, California \$1362 (818) 889-1741 CIRCLE 794 ON READER SERVICE CARD

PRINT SPOOLER TO DISK ry resident print spooler pgm that spools to disk instead of to memory. Features include:

. No loss of data . Works w/existing software. e Virtually unlimited amount of specied data e Proup menu from which you can disply data. -Start/ stop spopling and/or printing, and reposition printing \$34 (free demo avail.) Budget Software Company P.D. Box 12282 12162 E. Messissippi Ave.

Aurora, CO 80012-3499 303-895-9095

FOR OPTIMAL DISK PERFORMANCE



FAST, EFFICIENT — Vopt organizes your disk into conti-guous files for flat. Hickent, time-saving user Institut organiza-tion averages under 5 minutes, delly runs under 1 minutel Vopt's remarkable speed comes from its "best file" algorithm — It won't make a move unless it improves disk organization. CONVENIENT - Run it from your outcexec but tile.

SAFE — Vopt's contiguous files are easier to recover if accidentally deleted! Vopt's spead atlows files to be moved one-at a-lime, rather than taking chances on disk reliability

Detects and maps bad sectors. MANY ADDITIONAL FEATURES — Vept includes Vimap for graphic displays of HD storage utilization—Viseek for HD seek times—Vimarkbad scans HD to flag bad clusters— Vbench to benchmark your system—Vspeed displays floppy speed, sector spacing—Vrd displays disketle errors—Vprisc apaeda PrtSc operation—Vtar displays current active rminate-and-stay-resident programs.

FAST ORGANIZING FOR FASTER DISKS GOLDEN BOW SYSTEMS

\$49.95 Handing 6% Sales To-

619/298-9349

Knock f0% off time you

ICLE 795 ON READER S FREE SPACE ON SAVE 2 HOURS FULL DISKS WITH PER WEEK!

spend at your PC Keyboard. Unique "chording" feature The Automatic assures ease of use. Free up File Compressor 2 hours per week of your Get megabytes of extra disk space valuable time. RAPID-WRITER* comes complete Wood the expense or effort of installing a new hard disk with 101-type keyboard, software, manual, for \$199. Squish even lets other software (dBASE III. R base, etc.) read or Satisfaction guaranteed! Call update compressed files while they for information or to place stay compacted on disk ... without any software changes! That's right your order. Major credit cards, or your check. without aspanding one byte on disk! 1-800-523-8356 (in f1. A must for databases ... compress them up to 90% Reduce lext Nes 1-800-325-1850). On-site installation, training, custon ization, support available at

spreadsheets etc. up to 60% 'ideal for large data files" PC Magazine 2/24/87
You owe it to yoursell check this NYFC Newsletter Feb 87 one out PC/XT/ATeDOS 2 D & uneable recursor

Order today! Just \$79 + \$5 S.M SunDog Software (718) 855-9141

264 Court St. Brooklyn: NY 11231

CIRCLE 797 ON NEADER SERVICE CARD TO PLACE YOUR AD IN PC Magazine Classified Marketplace Call (212) 503-5115

additional cost from local

RAPIDWRITER dealers.

UTILITIES

Speed Hard Disk **Partitioning** Software

Breaks the 32 MB Barrier... **EFFORTLESSLY!**

- For PC-ATs, XTs, and compatibles. Creates multiple DOS partitions,
- up to 2,048 MB each. Supports ST412, RLL, ESDI and

SCSI controllers. SpeedStor software makes installation sim painiess...its user interface is a joy to work with." PC WEEK

Recommended and used by major disk drive, controller, LAN and PC manufacturers.

The industry standard: over 100,000 units sold.

Now includes SpeedCache caching soft-ware and Disk Drive diagnosticsFREE

STORAGE

981 University Ave erts in High Capacity PC Storage Los Gatos, CA 95030 CIRCLE 7M ON READER SE

LOSING TIME? GET ATCLK" Stop looking around for SETUP! This DOS installable driver will update the hardware clock on your IBM AT, HP Vectra or compatible wheneve the system TIME or DATE commands are used Simply add 1 line to the "Config sys" file. Driv uses 656 bytes of memory Only \$9.95. Site license \$49.95 Send chik M O. lo. SOFTKEY PROGRAMS, INC PO Box 139 Chadds Ford, PA 19317 (215) 793-3233

> THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

WORD

Writers, lawyers, researchers, organize free form

text by subjects—easily!—with SQUARE-NOTE." Make any number of notes, up to 10 pages & 100 subjects each, select by subjects. browse them on the screen, send them to you printer or word processor Import text, too! Many handy features. Online help, futorial & full manual Not copy protected \$69 + \$5 s/h Check/ VISA/MC. Full-featured derro \$6, credited toward nurrhase

(408) 395-2688

SQUARENOTE

the Idea Librarian HomoSquareway 265 Washington St./PO Box 228 Somerville, MA 02143 (617) 623-3023/800-334-0654 Ext. 583

PC MAGAZINE . SEPTEMBER 15, 1987

PROCESSING PC EDITOR'S CHDICEI

FOR MORE INFORMATION OR TO PLACE YOUR AD CALL 212 503-5115 . . .

WORD PROCESSING



your way Chart is always You have total control of Per ISM PCXTIAT" and competition, 256K RAM reprocesses or color er Dot maths character later

800-345-3908 --

\$49.95 Free shaping CHART MAKER LE 790 ON READER SERVICE CARD

Graphics and text integration

Capture graphics or text screen images and integrale with documents. Ideal for anyone who needs to integrate spreadsheet or practices ments. Also features transfer of data between programs, screen cul and paste, keyboard macros, printing support, easy-to-use interface, on line help, etc. Introductory price of \$29.95 + \$4 s/h, CA + 7% ST For more information about this unique program please call or write us LIBRA COMPUTING SYSTEMS, Inc. 105 Serra Way, Surte 443 bitas, CA 95035 (408) 946-5296

WORD/PHRASE SEARCH INDEX The Index Program searches a word-processed document for words and phrases you supply it. Creates an alphabelized index. Completely inferactive Manual & Tutorial on diskette PC,XT,AT, and compatibles. Requires 192K. Check, Visa. MC, PO or will invoice Full Guarantee Same day

1st class mail \$39 00 ODL Data PO Box 4065

312-377-3520

 Lexington, KY 40544 ● (606) 281-5944 . . 24 hours

INDEX YOUR TEXT FILE Need an index for the back of a report, book, manual, or thesis? PROINDEX takes any word processed document and a reference list, creates an index. Selectable page/line references, case sensitivity interactive thatch handles ASCII. WordStar & 8 brt data \$69.95 includes disk manual & shipping VISA/MC. ELFRING CONSULTING, INC. 4N899 West Many Drive St. Chartes, Illinois 60174

RIAFEAS

COMMUNICATION FOR OLDINA: Commons of our own Smittmenusly edit midgle languages on one line English, Greek, French, German, Spanish, Hebrew, Italian, Russian, Arabic Scientifiz & Graphics Mod for legal of-fices, embassies, midinational basiness, scientists & engineers. Offers milimeter, document comparison, math formula, ners ready typesetting etc. Dely \$799 Dealer Inquiries Welcomed.

Apollon Engineering, Inc. P O Box 807 Columbia, MD 29044 (1-800) 822-3327, (301) 596 0146

World's Billingual Word

Duarguan 1,3, bilingual word processor for English and of these Armenian, Bengali, Euro. Latin, Greek, Hinds, Khmer, Lao, Russian, Tamil. Telugu. Thai. Wet.... or create your own language with fonl editor \$69+\$4 s/h in US and Can. (+\$10 s/h foreign) For IBM compatibles with graphics & dol-matrix printer LaserJet add \$49 Demo \$5 MegaChomp Company

3524 Cottman Avenue Philadelphia, PA 19149-1606, U.S.A. 215-331-2748/8138

PC-WRITE SHAREWARE VER. 2.7 Fast, powerful word processor/text editor for IBM/PC/XT/AT Spelling checker, screen clip. mailmerge, splif screen, ASCII files, macros Supports proportional printing, laserJet +, and over 300 printers \$16 for all software, lutorial guide on diskette. OK to copy. Register for manual/support \$89 Full 90-day guarantee Duckselt

219 First N #2240 Seattle WA 98100 (206) 282-0452 Visa/MC

CompareRite FOR \$129.95 SAVE HOURS. See every change at a glancel Compare@its compares two documents instandy highlighting the differences between them in a third draft. Great for confracts, proposals. articles, reports, source code... You select appearance of added and deleted text. For major Word Processors Patent pending Introductory price at \$129.95 - S/H. II IRISAN Inc.

763 Massachusetts Ave. Cambridge, Ma 02138 800-262-5656/ext 9

TYPO GUARDIAN ANGEL \$39.95 The intelligent typing assistant that loads any

word processor for you, magically catches typas on the fly, consults 73,000 word dict/spelling rules, pag-up "clasest-words" scroll w/word insertion, automatically learns new words, increases keyboard speed. An absolute gern at \$39.95, don't leave DOS without her! General Knowledge Inc. 388 Ridgefield Road Witten, CT 06897 Call (203) 762-2225 to order

MISCELLANEOUS/ACCESSORIES



FREE CATALOG COMPUTER EQUIPMENT PROTECTION

KEEP COMPUTER IN TOP CONDITION PREVENT COSTLY ERRORS AND DAMAGE
 POWER INTERRUPTERS · LIME CONDITIONERS · MODEM PROT · UPS · BFGULATORS ELECTRONIC SPECIALISTS, INC.

Toll Free 800-225-4876 CIRCLE BOX ON READER SERVICE CARD



CompuTogs Dust Covers The ultimate in dust protection. Available in natural canvas/brown firm or new designer gray/black firm (aid \$2/cover). Our covers are lar superior to viny!!

COMPARE OUR PRICES! Tundy 1200 MONICPU 24 95 Tundy 1000-1200KBD 12 95 IBM PC MONICPU 24 95 IBM PC Krybrand 12 95 80 COL Protest top 132 COL Protestop ATTE300 Mov-MCN

≥ 20 MON-CPUNED 24 95 ⇒ 30 MON-CPUNED 19 95 ⇒ 30 MON-CPUNED 19 95 ⇒ 1000 MON-CPU 24 95 OVER 400 OTHER MODELS AVAILABLE 1-800-227-TOGS CompuTods - P.O. Box 2493 Naperville B, 60566-(312) 561-295 CUSTOM EMBROIDERY SHOWN AVAILABLE ASAMC Accepted Inches \$2.00 Stepping CIRCLE ME ON READER SERVICE CARD



• 100% Cotton Canvas

 Static-Free/Breathable Beige with Grey Trim Embroidered Emblern For: BM, PC, PC-AT, Compaq, AT&T Leading Edge "D," Epson Equity Printers: OKIDATA, EPSON, IBM, NEC Contemporary ComputerWea

1320-36th Avenue San Francisco, CA 94122 (800) 826-5761

CIRCLE SOI ON READER SERVICE CARD

FAGRIC DUST COVERS Durable protection for computers & peripheral

 Quality American Design/Materials/Labor . Select from 6 colors and over 1600 designs . Covers to fit your configuration Prices \$8.95-\$36.95 . No added shipping charge Monogram/Screen Print Available
 Your Salistaction Guazanteed COVERS UNLIMITED

> Germantown, TN 38183-1076 901-754-4465 THE

SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

TO PLACE YOUR AD IN PC Magazine Classified Marketplace Call (212) 503-5115

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

BAR CODING



Bear Rock Software Company 5069 Enterprise Drive • Placerville, CA 95667 • (916) 622-4640

Superb documentation

BAR CODE & MAGNETIC STRIPE READERS

for the IBM PC & AT

Simple & quick installation No additional software or port Metal wand & case

Also available

TPS ELECTRONICS 4047 Transport Stree Palo Alto, CA 94303

Telephone: 415-856-6833

BAR CODE-LABEL PRINTING

Tenter (Graphine) 371-9097 TPS PLA FAX: 415-858-3843 INCLE 808 ON READER SERVICE CARD



Code 39/UPC/2 of 5

PERCON: E-Z-READER FAST . ACCURATE . RUGGED NO SOFTWARE CHANGES with PC

Details or Questions? Call us (503) 344-1189

TO PLACE YOUR AD IN

PC Magazine Classified Marketplace Call (212) 503-5115

THE LABEL MAKER" grints bar codes, OCR-A like and large characters from data entered at keyboard or from disk files. Create and save unique conting formats and record layouts. Performs record add, change, delete, sort and seincl on disk Bits A.I. LASELMAKER" prints AAG shipping/parts identification labels required by Auto Mitris Requires IBM PC or work alike TJ SOFTWARE INC PO Box 2044 ogton Heights, E. 60006 (312) 364-1065

WHY PAY MORE Bar Code Printing Software for PC, XT, AT & Comp w/printers w/Epson-BM graphics emulation Universal Bar Code Generator \$45 (Works with almost any program). Test disk \$7. Small labels \$15 Large labels, Logmars, AIAG, dBASE & subr for Basic, Compilers, WP, Data Mont. etc \$25-\$55 Bar Code Readers \$195-\$395 GORDON COMPANY 20210 Lacevland

Katy Texas 77449

713-578-5522

LABELING SOFTWARE



for Epson/IBM/Old and OW! LaserJet Print

Text readable up to 50 ft . 13 text sizes up to 1.2"x1" 10 Bar Codes; 11, UPC/ EAN, I 2 of 5, MSI, Code 39
 DOD LOGMARS • AIAG Flexible Label Size/Design Color options • File input · Menu driven or user pro-

. EASY . FAST . \$49-\$279 Bar Code Readers For PC/XT/AT d metal pen & case Attaches as 2nd Key Codeber, Code 39, etc

RS-232 model

SAVE-A-SLOT externol ...

WORTHINGTON DATA SOLUTIONS 417-A Ingalis Srteet, Santa Cruz, California 35 408/458-9938 30 Day \$ Back Guer

BUSINESS OPPORTUNITIES EARN EXTRA \$222 AT HOME

Receive needed exposure to earn extra income by listing your experience, goals and equipment. Our database provides low cost/risk approach to introduce home programmers and companies reading programming help. Send now for complete info package and application Only cost is a low, one-time application fee HOME PROGRAMMERS INC PO Box 243-N15 El Segundo, CA 90245-0243

EXOTIC SOFTWARE

Looking for distributors for HOT NEW LINE of vertical market software inquire about exclusive territories available and special marketing concept. Call Mr Tanney at Action Computer Inc. 1-800-545-4005 in N.Y 1-914-834-3000 **ACTION COMPUTER** 1875 Paimer Avenue archmont NY 17538 (914) 834-3000

CATALOGUES

PCir Expansion Products

Possibly the largest selection of PCjr products in the country. We don't just sell PCjr products, we design them. *Secol Up Products *Piculo DMA Certro

*Second Floggy Disk Drives white Dark Dance •PCjr Optical Mice ov Adopters for PC's Parallel Printer Pres-*Full Size Keybourd

*Speech Allachmen *Jeysticks, Cables, & Adaptors Call or write to receive our free 32-pure catalog of PCtr Add-On products. For even faster results, citcle our reader service number

PC Enterprises "The jrProducts Group" Box 202, Belmar, NJ 07719 (201) 280-0025 (800) 922-PCJF CIRCLE 810 ON READER SERVICE CAL

COMPUTER INSURANCE

DATA SECURITY INSURANCE The "all risk" Personal Computer Policy from OSI includes essential coverages not available with other policies protection against loss of data (even from accidental erasure), loss of custom programs, and fraud Especially intended for business computers. Coverage can be bound by telephone, 9 to 4 Mountain Time.

DATA SECURITY INSURANCE 4800 Riverbend Road, PO Box 9003 Boulder, CO 80301 (303) 442-0900, (800) 822-0901

SAFEWARE

Insure your computer. Saleware provides full replacement of hardware, media, and purchased software As little as \$39 a year provides comprehensive coverage. With our blanket covgrage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm EST SAFEWARE. THE INSURANCE AGENCY INC 2929 N. High Street, PO. Box 02211

Columbus, OH 43202 (614) 262-0559 (DH), (800) 848-3469 (NAT)

COMPUTER SERVICES

FLAT RATE REPAIR PRICING IBM PC/XT/AT system board \$65/\$70/\$135 IBM PC/XT Keyboards cules adapter boards AST multifunction boards IBM diskette dove adapter \$35 Compaq Portable power supply 3-5 Days turn around. Call for commiste less PC Banay Inc.

Havertill, Ma 01830 617-372-6545 DATA CONVERSION

678 Fast Broad

CONVERSION SERVICES

Over 1000 formats Quick turnaround Professional staff word processors

databases spreadsheets disk to disk tape to disk optical scanning data entry mailing lists

Computer Systems Services 5 east 16th street new york, n.y. 10003

(212) 463-7511 america's leaders in data conversion

ON WORD Can read any document to disk Fasi, accurate optical scarring 10 000 + type foots

. typeset or typewritten . fact size-6 pts to 28 pts to all word processors volume discounts · systems and services · call for prices ON WORD DEVELOPMENT 434 Main St. Santa Monica, CA 90435 (213) 399-7733

DATA CONVERSION

DISK & TAPE CONVERSIONS OPTICAL SCANNING*

SCAN TYPESET TEXT 6 to 24 Pt DISK Convert from IBM, Wang Xero Execo Maconcell, 1000 + other for -TAPE Convert 800 to 6250 8PI Quick Turneround Quality Que 1 Computer Services

Sorth Hels. NY 11576 (212) 432 5252 (516) 627-1493

OISK CONVERSION We are the oldest and most versable conversion

company in the country. We'll electronically convert disks, tapes, or mag cards to your PC or word processor Over 20 billion characters converted since 1979. Oplical scanning available We provide the excellence you expect. Text accuracy quaranteed for disk conversions. TEXT SCIENCES CORPORATION 5430 San Fernando Rd Glendale, CA 91203 (818) 247-0792

DISK CONVERSION

o

TAPE/DISK CONVERSIONS (

Conversion services to or from over 800 computer systems: Magtapes • Mini Computers
 Micro Computers • Typesetters Word Processors CALL THE INDUSTRY LEADERS

COMPUTER SERVICES, Inc. (312) 459-6010

165 Arlington Heights Rd #M Buffalo Grove, IL 60089

DISK/OISK OR TAPE/OISK Conversions - Automatically, Bought a new computer? Convert your data in just 1-2 days SAVE TIME-SAVE MONEY! DISK/DISK or TAPE DISK Conversions start as low as \$14 for IRM CP/M, MS-DOS, UNXV, XENX & most other systems (Apple, Macintosh, Commodore conversions start at \$25) Call or write to: CREATIVE DATA SERVICES 1210 W Latimer Ave Campbell, CA 95008 408-866-6080

DISK CONVERSION

CONVERSION

We can read from and write to writeally any system including hypesothers. We can also formal desks for many systems. You can upgrade your system without lossing any data from your old system. Peases allow live working Gays for processing. Quantity 2244 N W 21 Tr Miners R. 33142

(305) 633-5241 Birmy Graphics CIRCLE \$14 OH READER BERVICE CARD

TAPE-TO-FLOPPY FLOPPY-TO-TAPE TAPE DUPLICATION

FLOPPY-TO-MICROFICHE LASER PRINTING SLIDE GRAPHICS

1-800-422-9622 Iln OK: 918-254-96221

TECHNICAL PROGRAMMING SERVICES, INC. 8506 EAST 61ST STREET TUISA OR 74133-1301 CHICLE BYS ON HEADER SERVICE CARD

OISK & TAPE CONV. from \$5/disk . Dedicated Word Processors - PC's -Maritames.

. 31/5" - 51/4" - 8" diskettes . 9 Irack tape conversion \$25 per Megabyte DCR Scanning - 50¢ per page. Disk Duplication · FREE Diskettes with pre-paid orders Quantity Discounts National pick up & delivery available.

OFFICE AUTOMATION SERVICES Sacramento, CA 95827 915-362-6268

TAPE TO DISK CONVERSION Unbeatable Prices-As-Low-As \$20/M8 -36 Hour Turnamend

-- Highest Quality-- All Work Guaranteed -- Professional, Technical Staff -Statistical Analysis - Sorting, Programming - 15 YEARS EXPERIENCE PRECISION CONVERSIONS 15 Hather Circle Centerport, NY 1172 (516) 261-1200

OISK CONVERSION Why pay for costly manual data re-entry? Let us convert it FAST & ECONOMICALLY

• Formats include: Wang, Xerox, Lanier, CPT. TRS80, Apple, Maciniosh, DW, DW3, Nummate. Wordstar & more + Typesetting Quadex, Magna, CRTrones, IACS. Linotern, Editwriter, Comp/Sel-Edit

2005 Palmer Avenue Lambrood NY 10538 212-409-6445/914-834-6393 CHANGING WORD PROCESSORS?

Media transfer to or from IBM/XEROX DEC WANG LANER, CPT, CT, MICOM, NBI, WORDSTAR, WORDPERFECT, DW3, MULTIMATE, SAMPIA, MASIL DCA TAPE__CACK Free test convi-CONVERSION SPECIALISTS 531 Main St. Suite 835 El Segundo, CA 92045 12131 545-6551 • (213) 322-6319

DISKETTE COPY SERVICE

Lower Duplication Expense with Our ...

Diskette Duplicator

IBM PC, XT, AL or Con Diskette Serialization * On Screen Production Statistics Multiple Formats



60 Airport Parkway Suite 64 San Jose, CA 95110 408/ 998-4177 CIRCLE BIE ON READER SERVICE CARD

TO PLACE YOUR AD IN PC Magazine Classified Marketplace Call (212) 503-5115

PC MAGAZINE . SEPTEMBER 15.



THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

DISK ETTE COPY SERVICE

We're the Leader in Software Duplication

Fortune 500 companies and software publishers choose Echo Data for 24 Hour turn-around, high quality, and competitive prices! All IBM formats are supported. Custom labels, sleeves, full packaging. We have the best state-of-the-art copy protection in the nation! Why even think about anyone else? Echo Data Services. Inc.



DUPLICATION

- · One Stop Shopping Custom Packaging Copy Protection **Technical Support**
- · Drop Shipping Fast Turn-Around Competitive Pricing



& Quality Software Duplication

2 Documentation Printing and Design SoftCopy, Inc.

CALL 1-800-222-9409 CINCLE IDS ON READER SERVICE CA

WE SELL MOUNTAIN COMPUTER WITH CAPABILITIES OF OURLO FORMATS UNLIMITED INC. FLYNAL PARK NEW YORK

COMPLETE DISK

DUPLICATION

SERVICES AND

EQUIPMENT SALES

LASELING - PACKAGING DESTRIBUTION HIGHEST QUALITY - PAST TURNARDUMS

(516) 458-4200 • 1 (800) 845-8481 FAX: (516) 488-4205 CIRCLE S18 ON READER SERVICE CARD TARGETED MARKETING INC. - Ity Brechner

800, 323,8282 In N.J., 201-445-7196 Lionville, PA 19353 NETWORKING 800-533-4188 or

215-363-2400 in PA CODO RIGHT®

YOUR SINGLE SOURCE SUPPLIER FOR.

- DUPLICATION SERVICES CORPORATE LABELING
- PRODUCTFULFILLMENT WAREHOUSING
- DISTRIBUTION SERVICES PLEASE CALL TODAY: 800-237-1130 513-443-2100 in Ohio

CODO RIGHT P.O. BOX 1005 DAYTON OH 45401 SCLE ATE ON READER SEX

Error-free Delivery

Our guarantee

& 48-hour Turnsround & Package Assembly & Orders Processing A Warldwide Shipping

329 North State Street, Orem, Ulch 94257

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

MAILING LISTS

FREE CATALOG Over 2 million names on 75 owner/user lists, IBM. Apple, mini sites resellers, stores, VAR's, chains, mail order dealers, educational, Unix, Pascal Cobal, Lalus, dBase, modern, investor, publications, clubs Call/While for free catalog include phone & type of business

Box 5125 . P Ridgewood, NJ 07451

Laptop to Desktop Networking LapDrive™ \$99 Gives a Laptop Direct Access to a Desktop's Hard Drives, Fioppies, Printers and RAM Disks

Run Progrems or Delete and Copy es Between Computers with indeed DOS Commands

Communicates et 115.200 Bits/Second

Includes Cebies and Software ARTHOPT, Inc. 602-293-6363 OFT

LAN PRINTER CONTROL With PRESET For Networks each user delermines the printing lords and lormals he will use

on each shared printer Now you can end print ing conflicts between LAN users forever on all MS/PC-DOS compatible LANs All printing leatures of 100+ printers are supported by menu From \$99 Call for more information. LASER AGE SCETWARE 1831 Prosser Ave Suite 204 Lee Annules C& 90025

(212) 420, 1202

NETWORKING

MULTI-USERS UNDER PC DOS Turn your 286-386 PC into a powerful multi-user system. Run all DOS programs. Connect inex pensive CRT terminals for up to 25 users PC-MADE 2005 A MULTILINK ADVANCED offer easy most affordable network solutions. Demos and complete systems using WYSE hardware available-call now!

Data Trust 379 Westwood fuerous Longbranch, NJ 07740 (210) 222-6363

PUBLICATIONS

*****PC PRICE GUIDE***** SAVE TIME & MONEY on your next hardware or

software purchase List of wholesale and retail cost, where to find the LOWEST PRICE nationwide. Name brand and clones listed i.e. the lowest price on an IBM XT or lowest price on XT clone. Name, address and phone of dealer with lowest price on each item. One issue \$9.50, 12 intrant \$(0)

JMS CONCEPTS INC PO Box 231372 San Degg, CA 92123

FINITE INFRASTRUCTURE A primer of 66th generation computing in which tiplications of binary matrices, algorithms for computing adjacency matrices from incidence matrices and graph (directed and undirected) incidence matrices from edge and vertex adja cency matrices, Very technical, 67 pages, \$3750, make check payable to.

Inel Gifford Rose Bud, AR 72137-0068

₩ MARKETPLACE

the ultimate target market!

The brand specifiers who read PC Magazine don't have the time to shop around, then only conveys as getting what this need as quickly as possible.

They'll DIRECT their attention to PC Magazine Classified Marketplace

For them PC Magazine Classified Machetplace's Direct Response Doplay Additional will have the products they need and the assermation they want regarding price. If you think that your histories can benefit from the 37 June brand specifiers who read PC Majazine - VOLTEE REGIST!

So take DIRECT action and call (212) 503-5115

PC MAGAZINE CLASSIFIED MARKETPLACE

the ultimate target market!

The brand specifiers who read PC Magazine don't have the time to shop around, their only concern is getting what they need as quickly as possible.

They'll DIRECT their attention to PC Magazine Classified Marketplace

For them PC Magazine Classified Marketplace's Direct-Response/ Display Ad format represents a fast, easy and cost effective method of product acquisition. They know it will have the products they need and the information they want regarding price, volume discounts, specifications and delivery.

If you think that your business can benefit from the 375,000 brand specifiers who read PC Magazine YOU'RE RIGHT!

So take DIRECT action

SUPPLIES

Long Life Laser Cartridge Recharge

LASTS 30-50% LONGER!

FACTORY LIKE METHOD-NO HOLES CUT! For Apple, H.P. & 25 more using Canon EP Engines. 100% Money Back Guarantee in writing! SEND \$38.50 + \$3.00 SH Texas Toner Cartridge Co. With Each Certridge To. 9794 Forest Ln,#262, Dalles, Texas 75243

(214) 475-5006 NOLE 822 ON READER SERVICE CARD



CUSTOM PC STATIONERY Continuous proted letterbeads with must necforated edges. Matching window or regular envelopes Numerous colors, riks, & papers at lowest prices. Fast delivery and top quality. Wr'll

print your present design or set type for your new design Call toll free 800-624-2961 (Tenn 901-756-7010) PerFORMS Press Cordova, TN 39018

LASER CARTRIOGE RECHARGE \$55 Save a lot of money \$55 recharging laser printer toner cartridges for Hewlett Packard

Laserjets, Canon, Apple Laserwriter, Corona, QMS Recharged cartridges are reconditioned to work like new but last 20% longer Money back unconditionally guaranteed. Send \$40 per car-tridge - \$3.s.h. Monthly discounts. LASER SYSTEMS 7 North Main, P.D. Box 407 Kaysville, UT 84037 (801) 544-3090

WE'LL RECONDITION & REFILL YOUR EMPTY LASER PRINTER TONES CARTRIDGES Seve To PRECON TECHNOLOGIES, INC

SOFTWARF PUBLISHING GDS offers a wide variety of services that will halo get your software to the market. Address your

. IBM style cloth/vvryl 3-ring binders/skps Labels, sleeves, disk pages, bulk diskettes
 Disk duplication with 100% verification · Shrink wrapping and product assembly · Quick lum-around A well packaged product can make the difference in making a sale. Call us now! VISA/MC GLENCO DEVELOPMENT SYSTEMS 3920 Ridge Ave Arlington Heights II 60004

needs with GOS

312-392-2492

THE SHOWCASE FOR PRODUCTS AND SERVICES IN THE MS DOS MARKET . . .

TO PLACE YOUR AD IN PC Magazine

Classified Marketplace Call (212) 503-5115

and call (212) 503-5115

Advertisers product index

10	ADVERTISER	PRIODUCT		R\$#	ADVERTISER	PRODUCT	PAGE
	UNTING SOFTWARE				ADSHEET/TEMPLAT		
	Bootlerd Schware Laward Boung Computer Services	Accounting Software Accounting Software	268 2 171 2	213	CSI Mouse Selvere	Duel Mosac Software Software Products	
	Buores Tests Inc			363 145		Software Products	
	Coope MI Software	ACT 1 Series	375 2	298 158 529	Software Selections Systems Management Assoc Public (Software) Library	69 Literty PC Decumbs Software by Public Library	299-2
	Business Tests for Cougo MT Saftware DAC Software H &C Computations	ACT 1 Series DAC 6 sey Assurance 2 S Lotes Software Accounting Software	375 96-57 145 367	529	Public (Software) Library	Software by Public Library	- 4
	Macris inc Seattern Selburn	Accounting Software Practices Concepts			TOP PUBLISHING		
	Pagenes Setwore O W Page Feet Asid Sottwere SST Care	Accounting Compate Accounting Software 4.0 1 Accounting Accounting Software Software 15	gr W	DESK	TOPPOBLISHING	Eron AST Product Line	126.10
	SRT Care	Accounting Software		321	AST Personal Declary technology Infrastrick	LASS FACT	
	TUB Inc	Selemen IS	205		MISSING	LASE PACT I ISSN Compatible Desiring Feb Systems	3
2SK	TOP ORGANIZERS	Men			ENTRY SOFTWARE		
	Lotus Development Corp.	Milita		174	Form Westing	form Web.	
LTA	BASE MANAGERS				ATIONAL SOFTWAR		
	Area Soberry	Paradox		750 W1	AC UR Bose Research Systems	AD US The Main Francisor Public Sorror Software	- 5
	Bonand international For & Galler	Quincoto Phys	40-0	341 312	Bloke Fernanck Systems Multipath Inc	Public Somer Software	4
	Oracle BC Sub	Professional Oracle Serbasse Products	40-47		RTAINMENT SOFTW		
	Oracle PC SG SBT Corp Public (Software) Library	Puratos Sartes Quidastris Prus Professional Chatte Sarbasses Products atlans Accounting Sarbasses by Prusing Library		M IE	ALIE SOFTW	ANE ANE	
	SION SUPPORT SYSTE				MANAGEMENT SOF	mwane.	
UI	Define	Deasen Suggest Selvane		ITO ME	MANAGEMENT SOT	Public Service Services	-
-							
LES	SYSTEMS & ACCESS M	ETHODS			DESIGNERS		
	Seriand International MicroCan Systems	Turbo Sanc Multifuc & Public Somer SW		126	EZI Grey	E2-Forms Executive	1
	PC SiG Patric (Software) Library	Selvers Products Selvers By Pales Library		COM	PATIBLE COMPUTER	5	
AF	NCIAL PLANNING SOF	WARE		343 234	Ragins Number Computer Systems	201 PC Compatition Compatition Computers	44.
	PC SIC Stephen Arribor Assessable Inc	Solvers Products Francial Planning Solvers	346	DISK	BACKUP & TAPE DR	IVES	
_					C-Con Electronics Color Colo Products Inc Color Standard Inc Events Systems. Inc Events Systems.	Proser Vicion Tage Rach Life System Cario Christ Tage Raching Tage Raching Tage Raching Serrocult Star Christ Chri	
FOI	RMATION MANAGERS			232	Cipher Data Products Inc.	Tape Back Lip System	
	Dynamic Microprocessor Assoc MicroCont Systems	Charmon Multifure & Public Domain S-W	380	205 184 180 375 451	Everya Systems, Inc.	Tape Backup	,
_				375	Internal Cognoring	Serrous Box	272-2
TEC	GRATED SOFTWARE			451	lumega Corporation JBM Systems	Date Creen Date Backup & Tape Creen	
	Sonand International Senand International Internation Software Sneger Cate Major Software Mosas Contiers	DACKA		275	Mountain Computer Inc. Senta Clara Systems	Distribution & Tape Drives Serior	
	District International	Mineralia Software	(2-4 1 229-220	_			
	Kinegen Clairs	Improved Software	448	HARD	DISKS		
	Mosac Software	EMEAN Total State Sensoring Software tringrand Software Abrily Pos Blocal Software	400	225 108	Core International JDR More Deveas Listense Memory Products Paul Naca Schware Plus Onesignment	Care Ornes	464
					Literae Menory Products	Mari Dubr Mari Dub Dine Mari Juli Dine Mari Dine Mari Dine	-
NU	UAGES			182	Paul Maca Software Bha Chaermoner	Maca Direct	410-4
	Burnigton Systems Burand Hermatonal Site Computing	Claren Turbo Parcal Toolbes, Turbo C	G2-6 1	40 47)	Storage Ownersons Marter	Hard Drok	- 7
	Ets Computing Microsoft	Uton OOS Language Quick Ranc III			PUTERS COMPATIBL		
				177			
ER	ATING SYSTEMS ENV	RONMENTS		521	Acer Technologies Advanced Lagic Remeanth	Acer 1100 ALR PC PC AMT 100 PC	246-2 306-2
	Software Line Inc	PC Most Weener 0005		507	American Micro Technology	PCAMT 306 PC	306-3
	Wester	Mental (CO)	CB	327	Annihad Video Inc ANC	Americal PC 5/2 ARC PC Entry AET Product Line	334.3 175.1
1OJ	ECT MANAGEMENT			296	AST Presents	Entire AET Product Line	
_	hmas Suhwas Publishma	Project Vision Hunger Treat Manager	20 156	-	Bentley Computers	Computers Computers	202 S
	Sulhware Publishing	Harvard Total Project Manager	154	## 207	Burdey Computers Burdey Computers Products CCOR	Computer Computers Computers and Assessment AT Come	
AT	ISTICAL SOFTWARE					Compatible	340
~		Metrical	40	153		PC Senters	799-3
	Man Soft SPSS Inc	Mich Call SPSS/FC+	40 30	258 256 468 212 272 539 354 122	Class Medic	A Curre Comparish Computer FC Senter Disease Workstein Tark Computer PC AT Comm	3
~~	EDITORS			400	Class Manda Carest Montenano Eschromen 14- Tech International Intelligent Microscophisms Microscophisms PC 1 Limited	PC At Cores	179-
A I			941	212	Inteligent Microsysterius Microsysterius	MP	
	Borland International Command Technology Corp	Shi eC	241	539	PC stimed		1
				122		Compatible Compatible The Princip KT OC 096 System PC System Boundoo Certain Boundoo Certain Tareino PC Compatible A Corr	3
IL	TIES			2% 2% 136	Outre States and Common	PC System	1
	Berner Blue by and international	Dig Plut Turbs Teathers	EP-4.1	136	Tander Corp	Tandon PC	216-2
	Ch	Dig Plus Turbs Toobex Dut! Ovec! Access		5/5 5/8	Guide Sean Freduck and Conquery Tander Corp United Statems Wells, American	E Say	
1573	CSI Delta Technology If furth Setheore Inside Cal International MoreCore Systems	Science Access investig	301 160	529	Whole Earth Computer	PC Competitio	
	Historia interpretaria	Sciency: Robertly Invest Booman; MARING & Public Coman S.W.	62	IMO:	TDEVICES		
	Personal Computer Support Personal Computer Support Personal Corp			Tel	DEVICES Data Data International	Turbo 101 Enterced Nayboard	
		See More Paragent General PC	15	279			-
	SCA Products & Services	Growy PC	344 361 487	279 244 162	Kay Trans		
	SCA Product & Servicus Scit Stream Settings Solutions Settings Solutions Settings Solutions Transactypisma Inc	Sturny Stone WP Software Aut Sex Operator	183	297	Logisch Logisch Microsoft	Lagrance Lagrance Mouse The Mouse	
	Softrage: Solutions	Gard Drives	- 195	960		Mouse	96
	Transactivations inc. Minte Crare Systems.	Brookyn Grotge	340	350 131	Terrington Company The	Tomngton Mouse	
				PROG	RAMMERS TOOLS U	TILITIES	
)Rí	PROCESSING SOFTY				Sertend interrutional		(2)
ORE	PROCESSING SOFTY			267 158 120	Sentral International Budades Selfware Central Point Selfware Central Point Selfware	The Raw	-
ORI	Bible Research Systems Sortand International of the Systems Str.	The Ware Processor Turke Basic Lana Case	041			PC 1eeb	
DRE	Bible Research Systems Sortand International of the Systems Str.		677 C24 1 679 403	120			
DRE	Bible Research Systems Sortand International HOS Software Inc. Missaic Software Middlesh Inc.		40	149	Microsoft Ostand Group, Inc	Good State III C-Scare	
DRI	Bible Research Systems Sortand International HOS Software Inc. Missaic Software Middlesh Inc.		40	149	Morsoft Ostand Group, Inc.	The Name Copy LIFC PC Stade Copy LIFC PC Stade Count Remont Cocya PR Copy Remont Cocya PR Copy Remont Remon	
DRI	Bible Research Systems Sortand International of the Systems Str.		40	149	Morsoft Ostand Group, Inc.	Come	
	Bibs Research Systems (Social International FACE) Surfaces Inc. Washing Software Microscom Systems Self Stream Self-Surfaces Self-Surfaces West-Surfaces Self-Surfaces West-Surfaces West-Surfaces West-Surfaces West-Surfaces	The With Processor Turks Basic Laps Lase Mincan Software Prints Coveran Software Relation Coveran Software Basic Software Software Basic Software Software Basic Software Software Basic Software Software Soft Basic Software Softw	40	149	Microsoft Ositand Group, Inc PC Bland Suffrage Sentenne Suffrage Sentenne Suffrage Sentenne Suffrage Sentenne Suffrage Sentenne	Come	
	Bibs Research Systems (Social Intervisional FACE Software Int Wester Software Michigan Inc Michigan Inc Michigan Inc Michigan Inc Michigan Inc Software Fathoring Withware Fathoring The Software The So	Turk Back Laps Lab Micker Software Micker Software Micker Software Micker La Palic Common S-W Backy Bank NP Software Auf Process Micker La Palic Common Auf Process Micker Software Auf Micker Software Auf Micker Software	40 40 40 40 40	749 317 299 334 336 125 115	Microsoft Celent Greep, Inc PC Band Suffrage Solders Suffrage Solders Software Wasters Turbo Fower	Code Programming Tools T-ObugPLUS	
	Bibs Research Systems (Social Intervisional FACE Software Int Wester Software Michigan Inc Michigan Inc Michigan Inc Michigan Inc Michigan Inc Software Fathoring Withware Fathoring The Software The So	Turk Back Laps Lab Micker Software Micker Software Micker Software Micker La Palic Common S-W Backy Bank NP Software Auf Process Micker La Palic Common Auf Process Micker Software Auf Micker Software Auf Micker Software	400 608 400 400 400 77	749 317 299 334 336 125 115	Moreott Delared Grego, Inc PC Stand Softings Southern Softings Southern Softings Southern Softings Southern Softings Southern Softings Southern Tarles Fower TIFUNCTION BOARD:	Gold Programming Tests 1 Charght Life	0
	Bibs Research Systems (Social International FACE) Surfaces Inc. Washing Software Microscom Systems Self Stream Self-Surfaces Self-Surfaces West-Surfaces Self-Surfaces West-Surfaces West-Surfaces West-Surfaces West-Surfaces		400 608 38 407 408 49	749 317 299 334 336 125 115	Microsoft Celent Greep, Inc PC Band Suffrage Solders Suffrage Solders Software Wasters Turbo Fower	Code Programming Tools T-ObugPLUS	175-

ø	ADVERTISER	PRODUCT	PAGE# RG	te s	AUVENTISER	PRODUCT	PAGE
DD-C	N BOARDS		D	ISKET	TTES		
_	Data Copy The Complete PC	More Fig. CAM-Complete Answering Machine PS-2 Family	61 19		fix (when	D-Martin	-
	Zudwysur-A/D	PS2 Family	2 P	OWER	PROTECTION		
AN	NERS/DIGITIZERS		20		Curtis Systems Corp Remorphin Microsophic (TD TC Cooling Systems Sub-Power Systems	Colore CD	
	CarCome Intelligent Option Comp	Digitizer Scanner	8 6 73		PC Coming Sentence	Materyacy Press Supplet Press Supplet	
		Save		ECUR			
RINT	ERS				ITY Interior	No. No.	
	Age America C 1130 Depth Products Caren USA Inc. District America Frontier Dates America Proteir Dates America Proteir Dates Front Depth Prot	Protection Fronter	30 30 30 30 30		Wij Automobil	Mass Mercery Data Security	
	Canon USA Inc. CIE terrorus	Proter Lips 104	34 36 34 36 37 P	CACC	ESSORIES		
	Citorn fenency Proter CMS	Proger Lover Protein Space Proteins LASE/SACT I	28 16		Appendit Carety Corp	Acomarie PC Assessing PC Assessings More fas Met Onle Accessions Replacement Suthery	_
	Campy Fork Desiry Technology Desiry	UKENACT I			Corts Manufacturing	Risasses New Year	
		Profess W s	2 2		Na Der Computer Products. Des	Mar Drifer Accessorate Sentenment Setters	
	Process Graphes Western Selemete	US-300 Prenter Sterring Severe	153 25 20 25 41 26 18 42		Moneya Computer Products		
	ER ACCESSORIES				Accounts Compared Accounts Compared Accounts Compared Accounts Compared Products Inc. Standard Compared Products Inc. Standard Compared Products Inc. Compared Inc	Coving Fare CAM Complete Answering Machine	
HIN!	ER ACCESSORIES	Part Water	- T	RAINI	NG SEMINARS		
	Bay Technical Associates Digital Products Dissont Hous Computer Prod	Prot Mater Prot Condos Data Parted	8 T	1	Septir Consulting John Willer & Sons Tric Time Life Seeks	dissi Programme Samour	
	Giffers Giffers Selfunci Selfunci Tit Tit Tit Tit Tit Tit Tit Tit Tit Ti	Printer Starring Cleans Manter states - Porter			Tomo Life Sente	disus Programming Sammar Pluz Book Computer Book Sames	
	Safeare Gradiens	Post Contra	- 25 R	ETAIL	DISTRIBUTORS		
	Wastern Televisis; Wasterngton Eato Solutions	Prote Switter. Prote Staring Cleves Prote Accessory	20 R	,	Sears Revetuels and Company	Burren Certer	
				AII O	ente		
JRT	ABLE LAP COMPUTER	\$			Kiene	Mel Daler	2
	Determs Javon Ceta Systems	Step 1 = 1 Computer Systems	20 20 20 20 15 15		Fig. Series Recorded to the Control of the Control	Barbaran Marian	90-2
	AYS & MONITORS				Anthree Adregion Computer Probabili	Mar Dider Mar Dider	40-
3PL		Monte	96.00		Bay Commanders	Max Order Max Order	207
	Ander MC Huma Electrones Inc	Montey Multiple Montey	293211 1913 198 20		Sufficiented Sufficient Computer Products	Mail Order Computers and Assessiones	40.0
	Sereoung Corp MrSE Factorology	W1-40/00 CT	- 5 29		C D W B Deed Watering Gary Common Senty	Mar Order Mar Order	
RAP	HICS SOFTWARE		9 29	•	C.O.W.B. Darico Microstrop Corp California Diptio Chile M. Contgo. Rest Cortgo. Print Computer Microsteric General Technology Corp. March Des Corputer Products	Mar Order Mar Order	364-3 280-2
	American Small Business Comp Burner Bus Form Hors Inc Novices Software Hydrical Publisher In Links Considerated Comp Mode Cylametics	Pro Design II Og The Gam Myon Gam Myon Gam Charte Salary Scaless Fresheres D: Table Hills Flesheres Hills Flesheres Hills Flesheres	77 126 438 146 238 248 248 25 244 25 244 25 244 25 244 24 244 246 246 246 24 246 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 246 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 24 246 2		Congo Pivil Computer Decount Warehouse	Mar Debr	
	Farm Work Inc	Sum Ross	20 10 20 20 20 20 20 20 20 20 20 br>20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 2		Computer Maximiter General Technology Comp	Mar Debe	206-3
	Herest Packard PS	Salery Sophics	20 30		nue Dis Computer Products	Mar Order Accessures Mar Order	
	Latus Gevelopment Gorp Media Cybarnetics	Dr. Halle	10 M		ade Computer Products	Mar Selection 700 -	102
	Pears 2 Set	NAM Rendert Publishers Fortbrook	24 X	,	No. Market	Mari Debe	
			2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		Compain Compain Compain Compain Compain Compain Compain Compain Professional Technology Compain Professional Compain Co	Mar Show	
DEC	O GRAPHICS/BOARDS Sees Systems are Gene Systems Care Breate Computer Setherings State Computer Setherings State Sender State Sende	Vite Code Start	- 2		On-Line Stern		- 3
	Garne Systems Corp	Vite Graphics Beard Sign (GA Graphics Bourts Graphics Bourts Graphics Bourts	20 20	5	Risue	No. Order	. 20
	Revolus Computer Technology	Graphics Boards	9 6		PC No.	Computer & Accommons	
	Mir Logicine	Snat ISA Pus	26 S		IC Named	Mar Debr	362-5
	STB Systems	Smart SA Pue Smart SA Pue VSA Sued VSA Sued VSA Sued VSA Sued	20 20		Prox 360	Mail Drifer	300-3
		HORE SIGNED HOPE	- N 30		DC Research	SC SW System	
CCE	LERATOR BOARDS		9		Sion Speake	Mari Drater	
200-200	Microwite Outred Technology Personal Computer Support Pressus Computers	Bunder Snaphy (CM: Order's Tartie family Brasiding 256, 266 - Optioning	20 10	46	Sales	Mai Drifer	80
205-300	Personal Computer Support Preusa Comactions	Broadhra 206, 206 - Ceptoning Acceptorator George	86 6 22 2	;**	Feet Computer Company Turne Technologies	May Order	28-
A140	UNICATIONS SOFTW	ADE			Management Sales Products	May Creat	
	BLAST COMMUNICATIONS SOFTWARE	Ber .			RONIC MAIL		
	BLAST COMMANACATIONS SOFTMARS Oresista Communications Lotus Development Corp Root Development SCA Products & Services	Bud Mark IV Saymo Fasquoti Grewy PC Salvo II I Salvo II Salvo II Sal	2 1		The Complete PC	CRIM Complete Annewing Machine	
	Name Decirorecy SCA Products & Services	Passent Satemay PC			IZATIONS SERVIC		
	Sethione Sathwara	Solom PC	20 20 20 20		Cahren Cepsiten Sinap GZ Cahryater Service Sean Reduct and Cahryany	Cohmen Topcolon Ensigh GE Nerton Lassing	
						Business Center	
DCA	L AREA NETWORKING	Fh4	M		LLANEOUS		
	Contrars	PC Pus Novel	28-39 Z1 18-16		Time-Unitaries	Computer Book Series	
	Digital Products	ProtOrester (All		REC	MARKETING CON	NECTION	
	After Company Products Corbins Designe International Operational O	Law Products FC Froza. FC Froza. FC Froza. Formania Service Froza.	-2 2		Active Advigor Computer Products Ste Dopross	Mar Didar Mar Drew	40-
	resource Schauer	Newstra Setwen	23-27 12 44 12 6-4 21		Be Express Belle (mited) COW # Direct Marketin Corp.	May Deby May Deby	40
	Own Con	Professional Stacks	2 2	10.0	COWN Send Metally Cop California Super	Mail Debr	
	Rose Cardinates	Meterwith	2 2		Compar Part	New Drew	-
	Server Factoralogy	Easy Print	38 10 30 10 30 10 40 10		COMP STREET STREET COMPANY COMPANY From Company From Anti-Company From Anti-Company From Anti-Company From Anti-Company From Anti-Company From MCARREST MCAR	Mar Debr Mar Debr Mar Debr	456
	Software Laik, Inc.	Unint		7	MIT REPORTS		
IICR	O.MAINERAME LINKS		20		Models' National Common Systems	Mail Draw	
	O-MAINFRAME LINKS	Imp	2527 25		Battigan Computer Systems On Liver States FC Princip	Mel Debr Mel Debr Mel Debr	
IODI					Daniel	Malble	
	House Montesimputer Products JDP Micro Devices Mignel Sufficies Van Tel	Nove Modern	- W		ETPLACE		
	JP Mon Seven	Hope Moderns Mar Order Proper Medical	G-C E	5	Acondre Carada Corp	Accords To least framery	
	Ven 1d	Motors	14 10	0	Pagest Engineering Grant Machin Enchance MDE Schwiese Inc.	Accessific The World Progressor Tage Stocker Sample Community Large State	
MUL	ATORS PROTOCOL C	ONVERTERS	20	1	HDC Software Inc. J.S.W Systems Software Management Agency	Lings Case Diss Dress	
	Penut	Terror Country	9 10			F Security	

INDEX TO ADVERTISERS

RS#	ADVERTISERS	PAGE	RS#	ADVERTISERS	PAGE	RS #	ADVERTISERS	PAGE	RS#	ADVERTISERS	PAGE
85	Access A File	471		Curtis Manufacturing	CE		Lifetime Memory Products	423	292	Real World Software	16
77	Acer Technologies	248-249	149	9AC Software, Inc	96-97	395	Logicsett	137-141	290	Rose Electronics	. 34
150						182	Logitech	221	739	SatePower Systems	33
21	Advanced Logic Research	2-3	140/14	1 DataDesk Int 1	225	262			319		
21	Advanced Logic Research AdvancedWate	424	307	1 DataDesk Int 1 DataBase Internti DataMedia	109-109		Lotus Development Corp Lotus Development Corp.	194-105	275	Santa Clare	7
	Alloy Computer Products Alps America	414	258	DataMedia .	111	349	Lotus Development Corp	128	479	SBT	. 88-95
142	Alos America	399-391	190			541	Lotus Development Corp.	211	322	SCA Products Sears Roebuck & Co.	35
102	Amdek Corp American Micro Tech American Research Corp	210-211	478	Day-Fio	322	284	M I U Automated	454	250	Sears Roebuck & Co	154
407	American Micro Tech	396-307	531	DCA Delta Technology	215-217	263	Mecole Math Soft Inc	347	128	Server Technology.	74
567 327	American Research Corp	334-335	256	Delta Technology	84	154	Math Soft Inc	. 42	184	Sharnrock .	. 460
475	American Small Business	77	321			745			252		
179	American Software House	513	241	Dictorix	153	387	MHI Industries	468	123	Silicon Specialities	
303	Amstrad Video Inc	201	338						314	SimpleMET	- 41
204	Arisa Software .	352-353	280	Sigital Products Dressethaus Computer Prod Dynamic Microprocessor	- 415	302	MicroCom Systems	15	523	Sefficione	22
162			295	Dressetheus Cornevter Prod	.440	1	Microsoft	56-57	191	Softine	
	Artington Computer Products AST Research	462-493	330	Dynamic Microecocessor	305	749	Microsoft	425	334		
	AST Research	175-180				200	Microstar	459	336	Settl new Solutions	125
296			199	EasyNet Elis Computing Epson	320	390			288		
W67				Filis Comestino	- 41	1	Microway Inc	133	235	Softraries	33
152	Barrington Systems .	- 04		Force	- 11	383	Migent Software	104, 197	512	Softstream	- 27
	Bay Express	444	194	Everex Systems	- 2	334	Migent Software	100	168	Software Directions	- 22
214	Ray Technical Asic	100				378	Mesubolis	293	393	Seftware Link, Inc.	- 20
482	Beclord Sativare	120	195	Everex Systems	31	373	M/sebsh	209	394	Software Link, Inc.	- 2
902	DECITAL DOLLMALE	200	122	Everex Systems EZX Corporation SFast Corrector Co		524	Missessi		129	Software Masters	
341	Bentley Computers Bible Research Blast Communications Software	365-362	126	EZA Corporation	145	383	Moneysworth Computer Produ Mosaic Software	7560-99	359	SCITWARD MASSES.	43
	Evide Research	472	180	Flagstaft Engineering	290-29/	197	Mountain Computer	. 403	1	Software Publishing	10
735	Blast Communications Software	438	180	Hagstart Engineering	4/2		Mountain Computer	199	170	Software Publishing	. 40
229	Boeing Computer Services	171	174	Form Ware	330	359	Mouse Systems	134	170	SPSS	3
125	Boffin Ltd	468	246	Fox & Geffer	26	312	Mutigath	429	517	STB	32
137	Borland International	109	311/31	5/318 Funk Software	161-163	730	Natural Microsystems	449	380	Stephes Archer	34
134	Borland International	C2-4,1	340	Gateway Communications	- 14		NEC Home Electronica	12-13	478	Storage Simensions/Maxter	. 44
207	Brubaker Software	403	261	GE Computer Service.	239	234	Northgate Computer Systems.	454-495	158	Systems Management Associates	47.
431	Buildag Competer Products Business Tools, Inc	416-417	266	General Technology Generic Settware	349	731	NSI Logic	359	135	Tendon Corp TASC	23
472	Business Tools, Inc	244	506	Generic Settware		317	Oakland Group	401	501	TASC	35
279	C-Cor Electronics	446	239	Genoa Systems	47	527	On-Line Store	420	134	TDK Electronics	43
198	Cahners Exposition Group	. 78				130					
510			255			304-3	05-305 Drizhid Technology	. 50	119		
218	Carloma Signal Canon USA	453	260	H&E Computronics	145	193	25-305 Drohid Technology Paul Mace Software	377	215	Time-Life Books	11
	Canon USA	344-345	276						313	Tiems	31
337	CCDA	447	201			310	PC Brend	22-25	118		
120	Central Point Software	321	105			299	PC Brand	. 76	30	TLB Inc.	20
156	Central Point Software	440	325						131	Torrington Company	. 23
191	Deverorm	399,399	142	Hercules .	123	473	PC Cooling	236		Trenser Systems Inc	42
348	CCDA Contrel Point Software Central Point Software Central Central DIE Terminals	72.73	142	Hercales	126	202	PC Cooling PC Home	271	116	Tomoston Company Trensec Systems Inc	- 7
232	Cipher Date Products	420	142	Heroules	127	496	PC Mart	326	1	United Solutions	298.30
112			157			533			354	Ven-Tel Inc	
727	DUTCH	184	498	Hi-Tech Int1 Hub 9 sk Computer	150	535	PC Network	410.431	127	Video-7	96
505	CITOH Club AT	254.255	287	Hat Bat Camputer	420	355	PC Pititop	484	171	Warehouse Data Products	
151	CMS	420	361	Information Suiders	197	145			515	Wells American	
	COME	454	354	Innuc .		539	PC's Limited		741	Wends.	
188	Commence Venturales	400	173	Inmax	342	355	Peophiree Software	6-11	563	Western Telematic	- 43
100	Command Technology Compaq	147 146	11/3	Innovative Software	243	1 200			309	Whitecrane Systems	
	Compaq	141-148	1 :	Intelligent Microsystems	224-231	689	moon resum	56	528	Whole Earth	- 34
228	CompuAdd Corp CompuPrint	(30 253	519	Introduct Microsystems	3/1-371	282	rersonal competer Support Gr	oup #0-87	528	Whole Earth	1000
	compurme	458		Intelligent Optics Intelligent Intell	- 10-61		Personal Computer Support Gr Personics Plus Development	19		Word Perfect Corp	-0
518	Computer Accessories	492	298	Indianacu indag		379	rius peveropment	410-411	222	Worthington	Z
109	Computer Discount Warehouse	465	269	International Battery Corp	324				734	Wyse Technology	
83	Computer Mail Dider	326-327	378	Jam Systems Jade Computer	272-273	253	Precise Connections .	. 352	1	WYSIWYG	3
163	Computer Products United Computervision	347	491	J&M Systems	473	503	Princeton Graphics Print 360	441	371	Z-Soft Zenith Data	. 31
150	Computervision	133	243	Jede Computer	458	329	Print 360	388-399	372	Zenith Deta	2
213			108			354			105		
257	Control Autometion . Core International	342	301	John Wiley & Sons	409	529	Public Software Library	21	1-4	Resder Service #. Please call adven	rtiser
225	Core International	369	343	Kaypro	348	104	D W Page	427	for int	ormation	
175			272	Kaypro Kensington Microware Key Tronic	C	122	Public Software Library D.W. Page DIC Research	341	1		
279	Crosstalk Communications	. 17	244	Key Troops	392	189					
391	Coesta Systems	340	490	Kriegerdata	450	236	Qubie	343	1		

FREE INFORMATION

IT'S AS EASY AS 1, 2, 3

CIRCLE FOR FREE INFORMATION

2. Ye



hill in your name and oddress and check off your answers to the four research questions. (One cord per person, please.)





Void after December 15, 1987

Zip (Zip code must be included to insure delivery)

POWIS-1

Please send me one year (22 issues) of PC Magazine for \$29.97 and bill me. I'll save \$4% off the newsstand price of \$64.90. (Full one-year subscription price \$39.97.) Offer valid in U.S. and passessions only.

251 252 253 254 255 256 257 258 2 301 302 303 304 305 306 307 308 3 351 352 353 354 355 356 337 358 3 401 402 403 404 405 406 407 408 4 451 452 453 454 455 456 457 458 4	99 210 211 212 213 214 215 216 217 218 99 240 261 262 263 264 265 266 267 368 99 340 311 312 313 314 315 316 317 318 99 340 361 342 363 345 365 366 377 318 99 410 411 412 413 414 415 416 417 418 99 450 411 412 413 464 465 466 467 468	100 270 271 272 273 170 175 176 277 277 119 320 321 322 323 324 325 326 327 33 100 370 371 372 373 374 375 376 377 37 419 426 421 422 423 424 425 426 427 47 1415 470 471 472 473 474 475 476 477 477	13 (14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	245 246 247 248 249 250 295 296 297 298 299 300 345 346 347 348 349 350 395 296 397 398 399 400 445 446 447 448 449 450 495 456 477 498 491 500
551 552 553 554 555 554 557 558 55 661 607 603 604 605 606 607 608 66 651 652 653 654 655 456 657 658 66 701 702 703 704 705 706 707 708 77 751 752 753 754 755 756 76 707 708 71 801 602 803 804 605 606 807 808 88	97 560 561 562 563 564 565 566 567 569 98 610 617 612 613 614 615 616 617 618 97 660 667 662 663 664 665 666 667 678 97 10 711 712 713 714 715 716 717 718 99 760 761 762 763 764 765 766 767 788 98 610 617 812 613 614 615 616 617 618	549 570 571 572 573 574 575 574 577 577 619 470 671 672 672 674 675 676 677 67 618 676 677 677 677 677 677 677 677 677 677 677	20 PT - 20 S - 2	595 596 597 598 599 600 665 646 647 648 649 650 695 696 697 698 699 700 1745 746 747 748 749 750 1795 796 797 798 799 800 845 846 847 848 849 850
 For which of the follow- ing products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply.) 	i. Add in Boards j. UNS k. Nicro-Mainframe Links Seftwere l. Communications m. Accounting n. Sproodsheet/Financial	t. MISDF Communications Systems, Programming u. Compressing 150 v. Finance/Accounting w. Marketing Soles 3. Is your company a reseller? z. Yes	PLEASE PRINT CLEARLY—one only one card per person Name Business Phone	
Hardware a. Mainframe b. Mini c. FC d. Printer/Platters e. Mainlors i. Terminals p. Madema h. Hard Disk/Tape Back-up	Managers p. Word Processors p. Detabase Managers p. Detabase Managers p. Graphics Graphics 2. Your primary job function is (check one): Administrative/General Management)	y. No 4. Next step after information is received: z. Furchose Order 1. Evaluation 2. Specification / Recommendation	Address Gry_ State. Zp. (Zp. Code must be ind (Zp. Code must be	O. (Full one-year
CIRCLE FOR FREE INFORA 101 102 103 104 105 106 107 108 1	RATION 09 110 111 112 (13 114 115 114 117 110	וו עבר פבר צבר ביצו וביצו וביצו וביצו וביצו פרו ו	Void of און (און 1941 הון (און קבן הבל קבן אבל כבל אבו בכל קבר ובן סבל קבן הכ	sher December 15, 1983

20 33 54 35 55 55 55 55 55 55 55 55 55 55 55 55	THE CONTROL OF THE CONTROL OO THE CONTROL OF THE CONTROL OF THE CONTROL OO THE CO
or all to the ARS 66 ART ARE REP to 10 of 10 of 12 of	IS EXP EIGN EST INCLUDED EST
olved in selecting L. Micro-Moinfrane Links u. Engineering/R&D selds/models to be Selfware u. Finance/Accounting with law year company w. Micro-Moinfrance Links u. Finance/Accounting w. Micro-Moinfrance Links u. Links/Rance Links u. Links/Rance Links u. Links/Rance Links u. Links/Rance Links/R	
regunization? (Check m. Accounting 3. Is your company a reseller? that apply.)	Company

HOW TO STAY ON TOP OF WHAT'S IN THE PC MARKE

USE THIS CARD TO OBTAIN FREE INFORMATION ABOUT PRODUCTS AND SERVICES IN THIS ISSUE (SEE OTHER SE



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 40338 Philadelphia, PA 19106-9931



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, PA

FIRST CLASS PERMIT NO. 27346 PHILADELPHIA, I

POSTAGE WILL BE PAID BY ADDRESSEE



P.O. Box 40338 Philadelphia, PA 19106-9931



FILL IN THE MISSING GAPS IN YOUR PC MAGAZINE LIBRARY

Complete your library of IBM-Standard reference information with back issues of PC MAGAZINE.















3/10/87-POWER GRAPHICS FOR BUSI-NESS: 44 Spreadsheets thet Supercharge your Spreadsheet Graphics; Animation Made Easy PC Slides; Reviews of TurbeBASIC; Early Tex; he Tex Adventage; Sharp's PC-7100 and 2/24/87-HAL 1-2-3: A O O ING EASE AND POWER TO LOTUS 1-2-3: 16 Full Featured Word Processors Under \$100, 80286 Based XTs; 20 00S Enhancing Utili-ties; AT Updete; Epson's Equity III Plus: PC Security Madems; Orchid

vard Professional, Front Page, Ventura Publisher; PC Labs Tests 5 Low-Cost Integrated Pack ages: 9 Affordable AT npatibles: 14 State nelogy's PC Net and of the Art Hard Oisk Cards: The IBM PCII: and more.

2/10/87-0ESKTOP 1/27/87-TOP ORAW PUBLISHING: HANDS-ON OATABASES-OctaEcse. REVIEWS OF-Pagema-R:BASE System V, dBASE ker. PFS: ClickArt. Har-III Plus, PFS Profes-sional File, PowerBese, Q & A; PC Megazine's 3rd Annual Awerds for Technical Excallence: Double Your Directories: Views on the Perfect Lag-Top: FREE Word Counter Program: AT Multifunc-tion Beards and more.

sonal Picks; The AT Clone from IBM; IBM Token Ring Report Card, Removable Herd Oisks -3 Bernoulli Chellengers: Electronic Thesauri Multi Dimensionel Spread sheets: CAO at Any Price: MSR: A New Approach to Software Support and more

1/13/87-THE BEST OF

12/23/86 - MORE 1986—3rd Annual Best POWER FOR PORTABLES & Worst Editor's Per--6 Hard working Lap-Tops; AT&T's SterLAN; FREE Security program; Animate Your Presentetions; NEWVIEWS-An Accounting Breek-through; Multiport Seriel Cerds; FreeLance Plus and more.

12/9/86-SPECIAL LAN ISSUE-Hends-On, In-Ocoth Reviews or NetWere, StarLAN, G. NET, S-NET, ProNET 10, ARCnet, TI's LANServer Professional's LAN Primer: Hard Oisk Tips: More Speed, More Space: First Look et HAL; 3 Winning Word Processors: Phoenix Macro Assembler and more

DOS to Tome!



11/25/86 - COMPAG

THE NEW LEADER; Spe-

cial Report: RAM Resi

dence Crisis; On-Line

Searchar: One-Stop Shooing: 1st Look at PFS

Professional Series:

State of the Art M*A*S*90; Volkswriter; The Gallery Collection;

Flash Supra Liminal

Messages and more.



11/11/85-3rd ANNUAL PRINTER ISSUE-97 New Printers Evelueted By PC Labs: Det Metrix. Oie Herd Daisy Wheels, Lasers As Low As \$1,995. New Lasers With Engines, A Readable Lao no-The 7-181 Small Talk: New Mice Irom LogiTech; Create A Master Print Control Utility

Order today, quantities are limited!

10/28/86 -TAMING

COMMUNICATIONS—PC Labs Tests 34 Modem Programs for Speed. Power and Eese; Bergain ATs—8 Competi-bles Under \$2,000 -R:Base Series 5000 and dBASE III Plus Go Head to Head; IBM's Next Generetion 286-Based XI and more

10/14/B6-PC LABS TESTS 18 LOW-COST

COMPATIBLES, 3 Lotus 1-2-3 KnockOffs; The Lenguege of A1-7 PROLOGS Compared 1st Look et Compeg's 32 Bit PC: 6 Utilities for Byte-Level Editing: FREE Cleanlly, Wyse PC286; PROGRAMS—Sat Bor-der Colors in Turbo Pas-cel; Pop Up Note Pads ODBOL and more.

9/30/86-NEW SCAN-NERS FOR TEXT GRAPH ICS; IBM's B-MHz AT; MegMaking Softwere: PC Labs Tests 14 Remote Emulators That Speek SNA: FREE PRO-GRAM-Painless Oisk

STATE_

9/16/86-PC LABS TESTS IB ACCELERATOR BOARDS-25 Back Up Systems: Programming: More EGA Secrets IBM Never Told You: 4 9,600 bos Modems: The Soft-

tion Wars end more.

ZIP_

JULY 86-00S TO TRA VEL-PC LABS Tests 9 Top Portables; Project Octabase II-26 FlatFile Choices: PC Labs Tests 10 Disk/Tapa Combo Units: Smart Answering ware Key to Hard Oisk Mechine: How to Flag Security: 7 3270 Emula-tion Boards: 2 Al Alter-natives; FCC Certifica-Live Toggle Keys; Strip ping Down dBASE Files for Speed and more.

Order back issues of PC MAGAZINE by returning the attached coupon, or clearly written order form, and mailing it with \$8 per copy ordered (\$9 in Canada and all other foreign countries) to: Other available issues call (212) 503-5319.

Please ship me the checked copies. I am enclosing \$8 for each issue ordered (\$9 in Canade end all other foreign countries, U.S. currency).			end all other	PC Magazine, Attn: Kim Armstrong One Park Avenue-4th Floor, New York, NY 10016
Issue date:				☐ Check/Money Order enclosed \$
3/10/87	2/24/87	2/10/87	1/27/87	Conecomoney order enclosed s
1/13/87	12/23/86	12/9/86	11/25/86	NAME
11/11/86	10/28/86	10/14/86	9/30/96	
	9/16/86		luly 86	ADDRESS



EDITORIAL PRODUCT INDEX

	R PRODUCT	COMPANY	PAGE	READER SERVICE HUMBER	PRODUCT	COMPANY	PAGE		R PRODUCT	COMPANY	PAGE
200	OUNTING: dBA			682	Acctg1 Series	Cougar Mountain	110	CON	NECTIVITY		
31	Account Male	SourceMate Information Systems inc	151	ins	Redford integrated	Software Redicot Software	112	438	AST-220 IRMA2	AST Research Inc.	4
10	Assistant Controller Champion III	Lake Avenue Software Champion Business	152 157	663	Accounting Business Accountant	Carp Decision Support	112	423	LinkMarder	Digital Communication Associates Master Control	3
	denote which	Systems		684	The Company Books	Software Sweider Information	121	_	version 2 D	Systems Inc.	
53	SRT Outsbook	Sensible Designs S&T Corp	158 158	170		Systems Inc			KTOP PUBLIS		_
	Accounting Library			894	CPA+	FrontRunner Development Corp.	122	441	PC Publisher Kit	Imagen Corp.	- 4
		h-Priced Packaç		680 646	Dac Easy Accounting Indian Ridge	Dac Software Inc.	124 126	HAP	DWARE		
72	ARS Accounting Modules The Accounting	American Business Systems Inc Star Monogram	165	657	Accounting Software LTChief and	Enterprises Inc Thoughtware Publishing	129	440 440	H40-I IRM System 2	CMS Enhancements Inc. CMS Enhancements Inc. NEC Home	4
78	Partner Plus ADS Business	AOS Software Inc	170	656	The Golden Eagle Dee-Write Plus	Co. Great American	131		Cable Adapter Part No. 44509	Electronics	
	Software			654	Peachtree Complete	Software Inc Peachtree Software	132	SOF	TWARE		
88	BPI Enterprise Series Bristol Integrated	Computer Associates International Inc Bristol Information	173	654	Business Accounting System	inc	132	633 535 534	Arborist The Confidence Factor	Texas Instruments Inc. Simple Software Inc.	35
	Accounting System Business Partner	Systems Inc		693	Rags to Riches	Chang Labs Inc	135	634	Decision	Once Segun Correctations	32
82	Accounting Software	Accountants Microsystems inc. (AMI)	181	642	Ready-to-Run Accounting ReadWorld 4-in-1	Manusoft Corp	136	630	Decision Aide II	Kepner-Tregoe Inc Decision Modeling	33 33
65 85	CertifLEX CharterHouse	CertifLEX Systems Charteritouse Software	182 184	549	Basic Accounting	RealWorld Corp	142	632 422	Decision Modeling Entry One	BPI Systems	- 4
189	CYMA Professional	Corp CYMA/McGraw-Hill	186	637	Shoebox Accountant TAS Books	CYMA:McGrzw-Hitl Business Tools Inc	143 144	627	Expert Choice	Decision Support Software Inc.	33
59	Accounting Series Double Entry	Systems Plus Inc	187	AFT	ER HOURS		_	421 629	In-House Accountant Light Year	Migent, Inc. Thoughtwere Inc.	33
97	EasySusiness Systems Excellent Plus	Computer Associates Inc	198	638	The Baseball Line Commander	Amoom Corp.	512	626 631	Predict*	Unison Technology Inc. Tempus Development	34
81	Excalibur Plus	Armor Systems Inc.	200	639 640	Bureaucracy Diviner at Eight	Infocors Rubicon Publishing	514 514				
61 79	Recyare Focus on Business	Microfinancial Corp- International Micro	203 204	635	NFL Trueline	J&R Software	512 516	536 424	What'sBestl Windows Graph 1 D	General Optimization Inc. Micrograft Inc	39
95	Great Plains	Systems Inc. Great Plant Software	206	641	WillWriter	Noio Press	516	LITT	LITIES		
-	Accounting Senes				PUTERS			425	DESQview 2.D	DuarterBeck	3
98 71 63	Harmony IBM Business Adviser	Open Systems Inc. IBM Corp. MC Software Inc.	208 210 217	427	CompuAdd Standard Turbo-1D IBM PS/2 Moder 80	CompuAdd Corp ISBN Corp.	46	431	Set-It Plus	Office Systems MAP Systems Inc	5
76	Income il Libra Accountino	Mic Software Inc. Libra Programming Inc	212	429	Yandy 4000	Tandy Corp	33 34	WO	RD PROCESSIN	10	
70	Software Macola Accounting	Macris Inc	229	433 434	Tandy 1000 HX Tandy 1000 TX	Tandy Corp. Tandy Corp.	33 33	430	Paraphiet Reader	Martin Beattle BAFOH	3
60	Software M*A*S 90	State of the Art Inc	222	435	Tendy 1400 LT	Taney Corp	33				
62	MCSA Business	MCSA	224	436	Tandy LP 1000 Vendex Turbo-888-XT	Tandy Corp Vender Pacific Inc	33 45	1			
70	Software Medalion Business	Timberine Software	226								
88	Series MICA Accounting Series	Micro Associates Inc	232								
84	Micro Business	Micro Businesss	234	PRO	DUCTIVITY		_				_
	Applications Accounting	Applications		DEPART	MENT	PROGRAM NAME GESCRIPT	1014				PM
62	Software MVP (Most Valuable Partner)	Cascade Software Inc	237	PC Lab N Program	ictes ming	DOSKEY lets you edit and star DIRMOTES makes space in yo 1-2-3 formula aliminates all E	de DOS co	mmands a	end make them into macros for file descriptions		35
290	Myte Myke	M & D Systems Inc	240								40
99	NewViews	Q W Page Associates	242		vet Dinic vet Clinic vet Clinic	1-2-3 macro reads directory in Burning other programs and			arses it to manage files mands from within Symph	pry.	40
И3	Open Systems Accounting Software	Open Systems Inc	245	Connects		Changing the name of an exist PC Focus or Paradox DBMS w	with Core I	sterrefere	of drives for damphage 1 and		-
168	Platinum	Advanced Business Microsystems Inc.	246	Connecti	vey Clinic	Possible problems that could like Santa Clara's Limited Art	be hampe ranced file	ning Orche Mare to i	d PCnef's speed.		- 1
69	Powerpac	Financial Information	247	Connecti	vity Chric	Universal Data Systems Sync IBM's PC LAN 1.10 on Comp Grounding EtherLink cable on	-Up mode	m offers a	tyric and syric auto-disling		- :
	The ProFit Series	Systems Crossways Technology	250	Connects	why Clinic	Grounding EtherLink cable on	a 3Com	etwork to	a cold water pipe		4
47		Corp. Applications Systems Corp	252	Turbo Po Turbo Po	wer User wer User wer User	Patching TURBO COM to bee Answering the "Include Error Making Turbo save programs	p wherev Message	r & finishe prompt	s compling from the DOS command is	ne	444
	PRO-TV Accountant			Turbo Po	over User	Preview allows alternate input	Moss by	radina e	of removing keypresses.		-
75	Rea/World Accounting	Real/World Corp	255			Parsing a string into substring	gs, or woo	ds, separa sens that	ried by blanks. send escape codes to print	-	-
75 86		RealWorld Corp Softmatics	262	Turbo Pt User-to-	liser						
75 66 45 67	Rea/World Accounting System Software A La Carte Solomon III	RealWorld Corp Softmatics International Inc TLB Inc	262 266	User-to-	User			meni sefi			5
147 175 196 145 167	Real-World Accounting System Software A La Carte Solomon III TCS	RealWorld Corp Softmatics Intervational Inc. TLB Inc TCS Software Inc	262 265 269	User-to-	User	PRODUCE Creates PRODUCE (Preserving PATH and PROME Renaming FORMAT COM to Doing multiple arguments for	enviror	ment sette ainst hard mands on	ngs before changing them. disk warrouts		4
175 106 145 167 ACC	RealWorld Accounting System: Software A La Carte Solomon III TCS COUNTING: Lov	Real/World Corp Softmatics International Inc. TLB Inc. TCS Software Inc. w-Priced Packag	262 265 269	User-to- User-to- User-to- User-to-	Joan User User	Preserving PATH and PROME Renaming FORMAT COM to Doing multiple arguments for Union Framework or Microsom	PT environ protect ag DOS com	mands on s to comb	ngs before changing them, disk wipcoults the same command line into worksheet and lind film		4
175 196 145 167	Real-World Accounting System Software A La Carte Solomon III TCS	RealWorld Corp Softmatics Intervational Inc. TLB Inc TCS Software Inc	262 265 269	User-to- User-to- User-to-	Joan User User	Preserving PATH and PROMP Renaming FORMAT COM to a Doing multiple arguments for	PT enveror protect ag DOS com it Window am wheth it zero-byt	mands or s to comb or or not A iffes mad	ngs before changing them, disk improvis the same command line line worksheet and text files ASI SYS is loaded in by REMed redirection		4

COMING UP

88386-BASED COMPUTERS Highpowered desktop computers built and latel 880386 microsprocessor are flooding to the state of the state of the state of the state aire gathered 1.1 machines from the first earlier Winn L. Rouch has subjected them to rigorous benchmark testing to see just what kind of power they offer. Reviews include speedy computers from Compad, Kayron, CP's Limited, Tandy, Acer Technologies, CCI, Corvis, Luser Digital, PC Docesum, Chicago Computer Commercion.

PROJECT MANAGEMENT Making sense out of a large project can be daunting, so why not let your PC do some of the organizing? Project management programs survey your time, money, and personnel resources, examine your priorities, and help you find the path of least resistance to successful completion of a large task. Henry Fersko-Weiss examines 13 project management packages.

LAPTOP ENHANCEMENIS Laptop PCs continue to get smaller and more soft phisticated, but as laptop users do more work out of the office, they demand better moderns, hard disks, and printers to take on the road. Howard Marks, B.G. Waldman, and Bill Howard review a collection of laptop accessories that can make your trip more moductive.

HARDWARE UTILITY PROGRAMS hardware utility programs can wam you when tragedy is about to strike. From simple floppy disk drive evaluators to complex hard disk formatters that can locate and repair any bad sector on a disk, these programs cover a wide territory. Wim L. Rosch compares 12 hardware utility programs and highlights the advantages these programs offer.

CONNECTIVITY The series continues with the DEC line of MS-DOS compatible systems and products: DEC's VAXmate Personal Computer, DEC's IBM PC Network Integration Package, and DEC's VAXVMS Services for MS-DOS.

GOOD STORY IS WORTH REPEATING...

Especially if it's about your product!

Why let your story remain hidden in a back issue of one of the world's leading computer magazines?

Let us take your article to its highest level of marketing potential with a reprint! This is one of the most valuable marketing tools you have on hand because:

- It represents unbiased coverage of your product by America's leading computer magazine!
- It clearly discusses your products features and canabilities!
- It is one of the most effective ways of telling your story to new customers, retailers, jobbers and distributors.

To find out how you can have your article or review elegantly reprinted ** on 80 lb. saper stock, in 4-color, 2-color or 1-color, call or write today. Jennifer Locke—Reprints Manager; Ziff-Davis Publishing Company, One Park Avenue, New York, NY 10016, 212-503-6447.

**Minimum quantity 500 reprints.



AFTER HOURS



Looking for an Angle On Sports

BY JOE DESPOSITO

People who speculate on sports
events usually have a voracious
appetite for statistics. Poring
over those long lines of names
and numbers is the homework
every successful handicapper
has to perform. Of course, it
takes special talent to select the
winner, but then there's no
shortage of formulas created to

make the process more reliable. There are two basic ways to handicap a sports contest. The first way is to use a database of information to spot trends: for example, how many times the Raiders covered the point spread when they were favored by six or more points. The second is to use a formula, perhaps one that combines a team rating with an individual pitcher's rating: how the Dodgers fare with Valenzuela versus the Astros with Rvan. The numbers are then compared with each other and with the odds on the game.

and with the odds on the game.
Of course, you could also
use a combination of the two
methods.
If you're going to turn to
software to do your handicapping, you'll want to consider

getting the stats on disk: there are on-line services (such as Computer Sports World), but they fre for professionals and prohibitively expensive for individuals. CompuServe is a good source, though it's often slow in posting and may not

slow in posting and may not have all the numbers you need. I looked at a couple of handicapping programs and found the greatest problem to be keeping the stats up to date.

The Baseball Line Commander

Commander
Created to help a professional handicapper, The Baseball
Line Commander, from Amoom Corp., uses a formula to
handicap games and suggest

When you first use the program, it uses an algorithm to make selections. You choose to handicap a game with or without entering a pitcher's earned run average (ERA). The program asks for the betting line and whether the event is a day or night game. For handicapping with ERAs, you are asked to input pitcher, team, and bullpen averages.

Later, when you've built up some stats, the program includes such things as streaks, road versus home performance, and turf factors. It also keeps track of your bankroll.

Since the program does not include a schedule of games, you have to input the daily Though various statistics clutter The Baseball Line Commander display, one display, one line advises on which seem to place your bet.

- DIN ASPRACTORS CONNEC	CA	ME G S	- N.Y. MICH	GER	
Aug Tets Stored	44	4.13	Aug Pate Sacrad	4.82	4.6
my Pets Allered					3.65
Fig/Loss Streek Det Sto/Loss Str			Wis/Less Streek Bet Wis/Loss Str		
CACE YOUR BET ON THE R INNEVER LINE THE I MOR LINE THE		75 PANES		NOWE.	
Proper way here to contin					

matchups. This is made less tedious by the fact that each team is assigned a number. But you still have to enter a fair amount of information.

I tried the program on a night's worth of baseball action. It was the first use of the program, and games were handicapped without using ERAs. Of 12 scheduled games, the program suggested six bets, with one a slightly stronger play than the others. It won; however, only one of the other three worth. The Line Commander, al-

The Line Commander, atthough easy enough to use, lacks finesse in its screen design. There were a few bugs, too. Sometimes when you enter the number of a team, the program doesn't accept it. At a cost of \$159.95, you have a right to expect a little more.

NFL Trueline

The 1987 version of NFL Trueline, from 1 & R Software, includes lines and results from 1984 through 1986, which you can call up for inspection. For the first 4 weeks of the '87 season, last year's statistics are used to make picks. From then on, choices will be made based on 1987 performance as you enter it into the program.

You're up and running with the program as soon as you enter game spreads. The 1987 schedule is already on disk, so it's a simple process, and you can immediately ask it to predict the winners. The program makes

choices on all the games, but it selects three standout plays.

selects three standout plays.
How well does it perform?
Based on my estimate of the
point spread, these are the picks
for Week One of the '87 NFL
season: Atlanta (+3) over Tampa Bay, Minnesota (-3) over
Detroit, and Cincinnati (even)

over Indianapolis. Of course, I had to guess at the point spread before the first rookies arrived at training camp.

The overall presentation of Trueline is excellent. The program uses colorful screens and works without a hitch. Reasonably priced at \$39.95, NFLI Trueline is useful for both NFLI Trueline is useful for both such as the program of the

wagering and office pools.

The bottom line on both programs is that they can be aids in making picks, but don't expect magic formulas. And remember, gambling losses are tax deductible only up to the amount of your gambling winnings, and they must be itemized.

14 MPrices The Buschull Line

Commander, \$159.95. Requires: 128K RAM. Copy protected. Amcom Corp., Pembroke Lake Office Park, #204, 4605 Pembroke Lake Circle, Virginia Beach, VA 23455; (804) 499-0616.

CIRCLE 628 ON READER SERVICE CARD List Price; NFL Trueline, \$39.95. Requires: 128K RAM. Not copy protected. J & R Software, 523 Second S1., Towanda, PA 18848; (717) 265-4259.

CIRCLE 638 ON READER SERVICE CARD







	STERLING SOFTWARE invitages focus.	\$80.00
	PORLAND HITTOGARD UTILITIES	
	eouriorr .	\$41.00
	SOFTWARE PESSARCH TECHNOLOGY	\$34.00
	SHOPLEY WISHINGTON CAR PROGRAMS AMERICAN SMALL RUSINGS SYSTEMS	49 00
		\$180.00
	MICROGRAPHX	\$275.00
	MERIDIAN COMMINDICATIONS	\$109.00
1	MICROSTUP	\$99.00
1	FUNK SOFTWILES	
	SOFTSTYLE	\$37.00
	Printworks Leser	\$38.00 48.00
	CENTRAL POINT SOFTWARE	
	QUAID SOFTWARE	\$24 00 80 00
_	Copywhite at 1991 3-th	CALL
\$375.00	ANYELIN	\$139.00
\$265.00	-	
	MIGENT	
00	Pocket Modem	
.00	\$105.0)()
100	MICA Managara Non Money SPINANTR	\$115.00
\$55.00	Pulting the Cine Milmule Monager to Work	\$55.00
\$48.00	HARDWARE	
\$64.00 12.00	PUNTSU DAIYES	\$05.00
\$24.00	PERS Thorse Person Control Con	\$650.00
29 00	BEAGAIT 70 MD Heed Dross w/WG Controller	
1,80.00 115.00	AST EXPANSION CARDS	\$445.00
\$57.00		
\$40.00	Romania PC	\$445.00
	Romonge PC Startesty	\$445.00 360.00 145.00
\$47.00	ALCOHOL:	
\$47.00	Arrest Board 28th wr592K Above Board PC 64 Above Board PS 754	180 00 183 00 183 00 340 00 340 00
\$43.00 \$29.00 59.00 \$2.00	MTRE Amore Second 28th or 192K. Above Second PC 64 Above Second PC 64 Above Second PC 192 Above Second PC 192 BEADYING CARDIN GRAPHIC CARDIN GRAPHIC FAIR ARABOM AR	\$175.00 340.00 340.00 \$185.00
\$47.00 \$79.00 57.00 \$2.00 \$2.00 \$31.00	MYTE Airce Board 25s or FRZK Airce Board PC 5d Above Board PC 3d Above Board PC 10s GRAPHIC CARDS COUNTY PLA PREADURY CLA AND Smith	\$375.00 240.00 340.00
\$43.00 \$29.00 59.00 \$2.00	MYTE Airce Board 25s or FRZK Airce Board PC 5d Above Board PC 3d Above Board PC 10s GRAPHIC CARDS COUNTY PLA PREADURY CLA AND Smith	\$375.00 340.00 340.00 \$185.00 \$370.00
\$47.00 \$79.00 57.00 \$2.00 \$2.00 \$31.00	Active Second 25th or FF2/C. Allows Second 75; 54 A	\$375.00 340.00 340.00 \$185.00 \$370.00
\$47.00 \$79.00 57.00 \$2.00 \$2.00 \$31.00	NATION TO SERVICE AND SERVICE	\$375.00 340.00 340.00 \$185.00 \$390.00

\$32.00

\$58.00

Fry 0/3 0/0

\$125.00 112.00 195.00

\$105.00

\$149.00

\$563.00

\$105.00

\$127.00

\$740.00 370.00

AFTER HOURS



The Latest Food Fashions, Soun

BY PEGGY GAVAN

Julia Child, step aside, Make way for Dinner at Eight, software's answer to thick, clumsy cookbooks and public television chefs

Dinner at Eight, from Rubicon Publishing, is a recipe database and meal planner that features 143 recipes collected from restaurants around the country, plus a wine suggestion list, liquid and solid measurement conversion table, and glossary of culinary terms.

The recipe selection will get high marks from anyone with an affection for the trendy. This is not the place to find a good stew; instead, Dinner at Eight offers Halibut Breaded with Cashews in Mango Basil, Lamb Chops with Goat Cheese, and Crabmeat Ravioli. A few standards are here-Bouillabaisse. Hollandaise Sauce, and New York Cheesecake-but, in general, these are fancy dishes.

You can add your own recipes or alter existing entries. and, for an annual fee of \$46.50, you can receive four more recipe data disks during the year, including The Silver Palate Collection. The Szechuan Chinese Collection, French Specialties, and Just Desserts.

Once you have chosen a recipe, you display the ingredients and directions and automatically adjust the ingredient quantities for the number of servings desired. A summary of the selection is also available, which includes its origin, preparation time, and the number of original servings. It can be very handy, but the database is clunky, forcing you to open and close files just to browse through recipes. During a session, you can

compile up to seven recipes in a



menu and-what is probably the program's greatest selling point-create a shopping list that gives you all the ingredients required. The program lets you determine how many portions will be needed (from 1 to 99) and then scales the ineredients

accordingly. To complete the meal, browse through the program's wine suggestion list and select the wine most appropriate for your gournet dinner.

As long as your dinner quests have an adventuresome palate. Dinner at Eight can be your guiding light to a successful dinner party. Bon appétit!

List Price: Dinner at Eight. \$49.95. Requires: 256K RAM. two disk drives, DOS 2.0 or later. Not copy protected. Rubicon Publishing, 2ttl Dickson Dr., Austin, TX 78704; (800) 622-2210; (512)448-4133.

CIRCLE MAD ON BEADER SERVICE CARD.



GAMES

Bureaucracy: More Grief for the **Frustrated**

BY MICHAEL W MUCHMORE

"Yap, yap, yap" is probably a good approximation of what bureaucratic talk sounds like. It's also what Bongo the bank dog says on the phone in the Murphy's-law world of Bureaucracv. an interactive fiction game

from Infocom The chirpy British humor is supplied by Douglas Adams, author of The Hitchhiker's Guide to the Galaxy

Bureaucracy challenges you to overcome a group of puzzles culminating in the ultimate conundrum-how to make it to Paris for a session of training and relaxation at your new employer's expense.

To achieve this end you respond to the game's changing situations, trying to say the right things and outwit the game's logic. While offbeat places tempt you and shady characters hinder your progress, at the same time they provide clues. If you make it through this maze. you'll get your address change form and paycheck so that you'll have enough money to take the Get Lost cab to the airport. Meanwhile, a beeping monitor of your "blood pressure" mirrors your rising frustration

A Save command allows you to stop playing at any time and continue your quest later: Infocom states that finishing can take months.

Everyone to whom I showed Bureaucracy laughed, because it does things unexpected from a computer, for one thing, it recognizes most profanity. It is, however, a true challenge.

Bureaucracy would be a good gift for anyone who wields large spools of red tape, or for anyone who enjoys solving problems. But those who have no need for self-imposed frustration would do well to leave this one alone.

List Price: Bureaucracy, \$39,95. Regulres: 128K RAM: 51/4-inch floppy disk drive; DOS 2.0 to 3.0. Not copy protected. Infocom, 125 Cambridge Park Dr., Cambridge, MA 02140; (800) 262-6868; (617) 576,3100

CIRCLE 639 ON READER SERVICE CARD



Compose Yourself!

Now create superb sounding music on your IBM® PC. Ad Lib™makes it easy.

Just when you thought you'd heard it ell, along comes Ad Lib.

And with it comes rich, room-filling music like you've never heard from e PC before. With rumbling up-front mid-range. All of it composed and performed on the first complete PC music system for people like you — long ndesire, a little short on experience.

The heert of the system is the Ad Lib Music Synthesizar Card."
An electronic sound synthesizer based on the seme digital technology found in professional keyboards and the finest music computars.

keyboards and the linest music computars. Just plug is into your PC end get cleen, powerful music through high fidelity headphones, bookshelf speakers, even your home stereo. I'll handle up to eleven different instrument sounds playing at once, so it's perfect for anything from e solo to e symphony.

sympnory.

There's elso Ad Lib Visual Composer,"
elsout the most instinctive composition
software ever devised. Simply draw
lines to indicate notes, using the onscreen pians keyboard es a guide.
Change instruments, tempo and
volume with a couple of keystrokes.
Cut, copy and pesta portions of your
music in a snap.

Included with the program is Composition Projects** #1, a step-by-step guide to creeting all kinds of music, including classical, jazz, bossa nova, regtime, and more. Just the thing for en ever-expending reportoire.

Visual Composer is worth \$89.95 if purchased seperately, but it's yours free when you buy the system. Then play back all of your cree-

tions, as well as several preprogrammed selections, on the Juke Box "playback software, also included with your system. Look for the Ad Lib Personel Computer

Look for the Ad Lib Personel Computer Music System™ at selected computer end music stores, or order direct from Ad Lib with your check, Visa or MasterCerd.

The Ad Lib Personal Computer Music System. At last, you have whet it takes to make great-sounding music.

The Ad Lib Personal Computer Music System. Includes the Ad Lib Music Synthesizer Card, Juke Box playback software, free Visual Composer software with 50 pre-set instrument sounds and Composition Projects #1 . \$245.00

Enhance your system further with this additional Ad Lib software:

Music Championship "#1 — Basic Concepts. Learn to identify basic musicel concepts, including tempo, mode, rhythm and key. Perfect for ell ages. The first in a series of music training programs combining syn-



music with exciting computer game competition . . . \$39.95 Instrument

Maker™ software. Lets you create and save new

sounds for use with Visual Composer. Alter 23 sound cheracteristics like attack, sustain and decay. Modeled after professional music synthesizer software \$49.95

music synthesizer software \$49.95

Look for more Ad Lib music software
titles coming soon.

Requires IBM PC, XT, AT or compatible, 256K RAM, DOS 2.0 or higher, CGA, EGA or monochrome

graphics adaptor.

To place your order, or to request your free demonstration recording, call us toil-free today.

Ad Lib Inc. 50 Staniford Street Suite 800 Boston, MA 02114

Personal Computer
Music System

2606

1-800-463-2686



AFTER HOURS



WillWriter: Some Basic Help for Putting Your Affairs in Order

BY WINN L. ROSCH

Once you've paid your taxes, only one thing is certain, an inevitability you may postpone but never prevent. WillWriter, from Nolo Press, is designed to help you make the best of the worst. The purpose of the program is uncommonly self-explanatory: it helps you prepare a legally binding will.

More than that, WillWriter's documentation will aid in assuring that the will you write works the way you want it to. The pro-

nesses to sign. Beyond making a mere will, it also helps play the avoid-probate game, letting you create trusts that will sidestep legal technicalities or, maybe, prevent your 18-yearold son from exchanging his inheritance for the life-style you wish you had led when you were his age. Of course, the important

will out for you and several wit-

questions about any program like WillWriter are whether it works and whether it's legal. Since computers are, so far, immune from prosecution in most jurisdictions, the latter might not matter to the publisher-but it is certainly important to you. Fortunately WillWriter scores high in efficacy and can, without a doubt, construct a perfectly legal document to effectively transfer your worldly goods to

shuffled off this mortal coil Then again, if you wrote your wishes in lipstick on a shopping bag and had them properly witnessed, the resulting scribblings would be as effective as anything that Will-Writer generates on a PC

one or more people after you've

But that misses the importance of paying for an attorney's aid in preparing a will. In truth, people often have no clear idea of exactly what to do with their largess. Making a will requires deep thought and hard decisions. Make a mistake and, by the time it's discovered, you

can't do anything about it. A good estate-planning attorney doesn't just transcribe your wishes into paper form but Please enter a PRECISE DESCRIPTION of the PROPERTY you want to leave to William K. Spencer BEQUEST 0 3

Will Writer's interface is crude, but the program carefully moves you the rudsments of will construction

offers professional advice. shows you alternatives, and may even help temper rash judgments

To substitute for this professional guidance, WillWriter suggests consulting a book. published, incidentally, by Nolo Press. That's a good first step, but not the only one you should think of taking.

The bottom line is that if you're sure of what you want to do and how to go about it, Will-Writer can prepare a suitably simple will. You might use the program to draft out your thoughts and then confirm the work with an attorney.

Legal Advice and Common Sense

The WillWriter manual offers an assortment of legal

tips. Some samples: · Explore giving away assets before you die; it could save on estate taxes. . If you have a properly prepured will, do not alter it:

prepare a new will or codicil to make changes. . If you create a new will, make sure the old will is destroved.

Viewed as software rather than as a legal advisor. Will-Writer rates as primitive work, indeed. Basically, it's a Boolcan logic tree implemented in BASIC that selects boilerplate paragraphs, inserts your input, and prints it all out. Such inelegance can be forgiven, since making a will is pretty simple stuff. Alas, WillWriter doesn't even correct obvious errors such as a 12-digit Social Security

Overall, using WillWriter is better than relying on yourself to muddle through a legal morass, but it's best viewed as a tool in an overall plan that should also involve seeking professional help. However, if your estate is so small that you don't think it's worth the \$40 to \$100 you'll pay for a simple, attorney-drafted will, then you may not need a will at all.

Winn L. Rosch, a contributing editor of PC Magazine, is an attorney. List Price: WillWriter, \$49.95.

Requires: BASIC interpreter Not copy protected. Nolo Press, 950 Parker St., Berkeley, CA 94710; (415) 549-1976.

CIRCLE 641 ON READER SERVICE CARD

AFTER HOURS INDEX

WillWriter Preparing for the worst

Dinner at Eight Recipes for trendy dining. from lamb with goat cheese to

crabmeat ravioli Bureaucracy Adventures in modern times

The Baseball Line Commander, NFL Trueline Making odds on sports

gram gives enough direction so that you properly execute the document to make it entirely effective in all states except Loui-

Using the program is little more than playing "Twenty Questions." The program asks you for the information it needs to choose the correct wording and fill in all the blanks. When WillWriter is done, it prints the

PC MAGAZINE . SEPTEMBER 15, 1987

Switch on a serious surge suppressor.





With test after test proving that 70-90% of all PC malfunctions can be traced to power problems, a surge suppressor is the first accessory you should buy for your PC. But don't put your trust in just any surge suppressor. Get one that gives your whole system

superior protection. One that's engineered to the highest specifications.

Meets IEEE 587-1980 Category A Meets IEEE 587-1980 Category B III Listed

Get a Kensington Master Piece® or Master Piece Plus They're the most popular

The right surge suppressor passes all the tests PC surge suppressors. And the most serious. Because at Kensington, we're dedicated to giving your PC the best possible protection.

That's why Master Piece and Master Piece Plus are equipped with our unique two-stage surge suppression circuit, containing a high-speed silicon semiconductor for the quick reaction necessary and heavy-duty metal oxide varistors for the brute force required to keep even the largest surges from penetrating into your system.

That's why the plus in Master Piece Plus is additional modem surge suppression circuitry to protect your modern from surges,

spikes and noise on the telephone line.

And that's why the circuitry in both models can handle anything an electrical storm or your local power company can offer - up to 6,000 volts with a 3,000 amp follow-on current. (That's the kind of superior performance that passes not only UL* testing, but Categories A and B of the strict IEEE specification 587-1980 as well.)

Now, this may look to you like we're taking more than the necessary precautions. And actually, we are. But after all, isn't that

what you expect from a serious surge suppressor?

Master Piece (\$149.95) and Master Piece Plus (\$159.95). For more info. or a dealer near you. call (800) 535-4242. In NY (212) 475-5200





The Ones To Ask For

Curtis Electronic Surge Pratectors are built to provide surge pratection for any microcomputer for a lifetime. Constructed with precision, using advanced semiconductor technology, the Curtis Jöwels prevent damage to microcomputer systems and data from powerline overvoltage



"surges, spikes and gillches." Surge protection from the Curits Jewels is your guarantee of the best line of defense for your valuoble hardware and adra, at a price that won't shock you. Get your computer the protection if deserves with Curits — the experts in accessories.

Curtis products are available nationally from leading Dealers, Distributors, and Retail Chains. In Canado Marc-Computer Products, PO, Box 235, April, ORI, Compadit \$ 502, 4610; 427-6412 For the Curtis dealer nearest you call (603) 924-3823

One-stop shopping for Innovative Computer Accessories CLISTIS



